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THE NECROPOLIS OF ANCON.

THIRD VOLUME.

THE

NECROPOLIS OF ANCON

IN PERU

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A CONTRIBUTION TO OUR KNOWLEDGE OF

THE CULTURE AND INDUSTRIES

OF THE

EMPIRE OF THE INCAS

BEING THE RESULTS OF EXCAVATIONS MADE ON THE SPOT

BY

W. REISS AND A. STÜBEL

TRANSLATED

BY

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WITH THE AID OF THE GENERAL ADMINISTRATION OF THE ROYAL MUSEUMS OF BERLIN.

THIRD VOLUME

WITH THE COOPERATION OF

L. WITTMACK — R. VIRCHOW — A. NEHRING.

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PLATES

OF THE

THIRD VOLUME

ORNAMENTS, UTENSILS, EARTHENWARE

EVOLUTION OF ORNAMENTATION

SCIENTIFIC PARTS

TREATED BY

PROF. L. WITTMACK, PROF. R. VIRCHOW, PROF. A. NEHRING

(PLATES 75—119)

The two previous volumes having exhibited the Necropolis with its graves and mummies, garments and textiles, the third deals in Parts VIII—XI with the small articles of attire and equipment, ornaments, weapons, wood and metal ware, toys, clay vessels, in a word all objects of daily use, whose preservation in the graves gives us an insight into the domestic life of the Indians.

An illustrated supplement to this section is presented by Part XII, figuring the costume of the ancient Indians, and grouping their ornaments in the order of their development and evolution from geometric and organic forms.

The concluding Parts, XIII—XV, contain scientific treatises by Professor L. Wittmack on the plants found in the graves; by Professor R. Virchow on the human remains, and by Professor A. Nehring on the Animals.

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VIII.

HEAD-DRESS — SLINGS — ORNAMENTS.

(PLATES 75—80.)

Amongst all peoples and at all times importance was attached to the decoration of the covering of the head. Hats, hoops and coronets of plumes were worn as ornaments and signs of rank, and the hair was decked with coloured bands, tufts of feathers and other finery. In Ancon also the long hair is found tied up with brightly woven or plaited fillets, not unfrequently replaced by slings. Instead of hats crown-shaped hoops were worn plaited of rushes or some straw-like material, and although rarely, thick woollen caps covering the whole head. As a further embellishment artificially prepared tufts of feathers were attached to the head-gear, or else single feathers inserted in the plaited covering.

The most striking ornaments were undoubtedly the large ear-plugs of diverse forms and material, occurring both on the false heads and inside the Mummy packs, and worn, as stated in the reports of the Conquistadores, as special badges of honour and even, in the case of the so-called Orejones, as the mark of a whole caste.

Associated with the ear-plugs are necklaces, armlets, bracelets, besides smaller trinkets perhaps worn as charms. The ornamental pendants are often further embellished with small animal figures carved out of common shells or mother-of-pearl. Isolated specimens also occur of finely drilled hard pebbles, as well as pearls, flakes of sodalite, silicated copper and marble. The largest and finest specimen of this class is the doubly pierced opal figured on Plate 80.

On the second Plate devoted to the necklets, are introduced some objects carved from horn, shells and wood, noteworthy as specimens of carving.

The few silver or copper objects intended as arm or neck ornaments are grouped with the Metal ware in the following Part.

The Plates of this Part have been prepared by Herren P. Schulz, F. Schmidt and Fräulein M. Hennig.

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IX.

METAL OBJECTS — UTENSILS AND IMPLEMENTS.

(PLATES 81—87.)

IX.

METAL OBJECTS — UTENSILS AND IMPLEMENTS.

(PLATES 81—87.)

At the head of the domestic utensils and implements stand the objects made of metal. They are limited to ornaments worn on the person or sewed to the dress, and to such small utensils and implements as bowls, pincers, fishing-hooks, needles. Although too few to give a complete idea of the metal industry of that time, these objects afford some proof of the skill displayed in hammering into thin plates or casting the malleable metals copper and silver. Gold we did not ourselves find in Ancon. The knowledge of soldering is attested by the rings and hollow beads of wrought silver. The plates are cut with sharp instruments, and the superadded ornamentation effected by hammering into the depressions of suitable foundations.

From the household utensils figured on the following Plates the clay vessels have been excluded, as these form a special Part comprising Plates 92—100. All other utensils, prepared from the rind of fruits, from wood, bones, stone, shells, rush matting &c, are here brought together. Amongst them are also included those objects, the use of which can only be conjectured. For the Indian household, besides the pottery, those vessels, must be regarded as almost indispensable, which were made of the hard shell of the gourd and used for holding liquids, keeping dry food and many other purposes.

The larger but very simple wooden ware all and severally betray the imperfection of the tools, with which they were executed. With these are grouped a few weapons, spears, bows and arrows, also of wood.

A greater display of artistic skill is shown by the carvings and sculptures on the spinning and weaving implements. Of the varied designs of spindles a larger but by no means exhaustive series is here exhibited.

The various small articles used in the kitchin, house industries and the toilet, although mostly executed in an unpretentious way, still betray a certain care on the part of the artisan. Specially noteworthy are the sharp surface carvings on the wooden spoons.

Due regard being had for the available space, room was found for the foot gear on the last Plate of this section.

Plate 81 was prepared by Fräulein Hennig, 86 by Herr A. Weiss, all the rest of this Part by Herr Schmidt.

PLATES OF PART IX.

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X.

TOYS.

(PLATES 88—91.)

The ancient Indians seem to have been quite as fond of their children as are their modern descendants. This sentiment is revealed in the various parting gifts deposited with children in the grave, and consisting mainly of toys, dolls, small clay utensils, peculiarly shaped stones, variegated feathers and the like. And how daintily finished the dolls' dresses! How carefully and naturally imitated everything associated with the daily life of the grown up folk, which in the tenderest years must have already awakened the child's curiosity!

Two Plates of this Part exhibit, besides small dress fragments, larger clay figures clothed in a style which leaves no doubt that these were really toys. But besides such indubitable dolls, there are a number other small clay figures, which were long regarded and described as idols, the so-called "Canopi", their occurence inside the child mummy packs and their perfect conformity with toys of other materials having been overlooked. On the last Plate of this Part is given a small selection from the numerous dolls of this class found in Ancon.

The Plates of this Part have been prepared by Herren A. Weiss and F. Schmidt.

PLATES OF PART X.

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112. Dolls and Animal Figures . . . . . „ 89
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XI.

EARTHENWARE.

(PLATES 92—100.)

In contrast with the earthenware of Trujillo, Ancachs and other provinces of the ancient Peruvian empire, often so perfectly finished, the numerous Ancon finds present with few exceptions none but household objects of inferior workmanship. But even in these vessels, mostly made of coarse material, we again meet with the typical forms of Peruvian ceramics. Even the simplest kitchen utensils seldom lack some kind of ornament, if only plastically executed by scratchings, or by painting.

From the first Plate of this section we see what large dimensions combined with beauty of form the clay vessels could assume. In general bulging forms prevail, provided, according to the use for which they were intended, either with wide funnel-shaped openings, or with narrow mouths. The latter should probably be regarded as the drinking vessels properly so called, characteristic of which is the mouth-piece attached to a hollow hoop, which communicates with the body and also serves as a handle. By no means rare are the double vases, consisting of two or more grouped and connected together, and often made in the form of fruits or animals. Of the beaker and bowl class comparatively few specimens are painted and ornamented; most of them are rudely executed, being apparently intended for daily use. To this class also belong the dishes, in which were found the fruits and the food deposited with the dead.

According to the material and style of execution, the bulging vessels may be disposed in several series, showing however manifold transitional forms. From the fine gray, mostly small and elegant vases darker varieties lead up to the black and red crockery with glazed sloping surface, distinguished by their solidity and thinness. These last were made of fine clay thoroughly kneaded and showing little granular intermixture, whereas the red cooking vessels are of coarse clay and often most defectively baked.

The finer vases combine graceful form with delicately executed painting, some showing designs disposed in numerous sections and carefully worked out, others sketchy lines and figures boldly dashed off. With the colour ornamentation is associated the plastic decoration, which even predominates, being entirely absent from but few objects of the potter's art. On some we have merely a few strokes scratched in, on others fruits, animal and human figures stamped on or attached. But even the richest embellishment was deemed insufficient, and the whole vase itself was regarded as an ornamental object, receiving the form of fruits, of animals and apparently most frequently of human beings. The fruit type was natural enough, so many Indian objects being derived from the vegetable kingdom. The task was more difficult when they came to imitate animal forms, although here also we have some very successful productions. But the happiest results were obtained from the adoption of the human figure, the body of the vessel being sometimes conceived as the whole form of a squatting person, whose head is represented by the neck, while at other times the whole vessel is treated as a human head, the attached orifice serving as a covering or headdress. These are the facial urns, which exceed all other forms of old Peruvian ceramics both in their heterogeneous development and in the frequency of their occurrence. In the commoner vases of this class the face only is usually to some extent worked out, of the body the lower extremities alone being sketchily suggested, while the arms serve as handles.

The ornaments, in the form of small animal figures, heads or fruits attached to the neck body or handle of many vessels, also frequently aimed at rendering the article more serviceable. The arched or pointed bottom of a large number of vessels suggests the idea that they were intended to be set in soft earth, or in hollow ground.

In the ornamentation in relief, but especially in the painting we meet with the same motives as in the weaver's art. Here recur human faces and figures similarly drawn, the same animals and geometrical figures similarly disposed. Noteworthy is the white, often brilliant colour applied in the painting jointly with black and the various shades of red brown and grey.

The vessels were prepared without pallet, the larger vases being mostly built up of cylindrical clay strips, the smaller no doubt also at times pressed in moulds. They were mostly made up of several pieces, the body usually consisting of two halves joined together, to which neck, handle and ornaments were firmly attached. The decoration is partly freehand, partly directly impressed with stamps, or else prepared beforehand and laid on.

In the reproduction of the earthenware on the following Plates care has been taken to represent all the here indicated peculiarities of the Ceramic industry of Ancon. The grouping has been regulated on the one hand by the colour, on the other by the form of the objects.

The Plates have been prepared from watercolours by Fräulein M. Hennig.

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116. Black Earthenware Vessels . . . . . „ 93
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118. Gray Earthenware . . . . . „ 95
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123. Ornamental pieces of Earthenware and smaller Clay Vessels . . . . . „ 100

XII.

COSTUMES OF THE INCA PERIOD.

DEVELOPMENT OF ORNAMENTATION.

(PLATES 101—104.)

In order to adduce authentic evidence of the costume of the former inhabitants of Peru, as treated in detail in Volume II, the design is here utilised of a native and contemporary artist, who has excellently illustrated the style of dress and equipment of the ancient Peruvian Warriors.

The three following Plates illustrate the evolution of ornamentation, as far as it can be traced in the objects found in Ancon, and especially in the samples of weaving. Human figures and animal forms play a large part jointly with geometrical elements, the combination of both leading to new and original formations. It might, for instance be doubted whether a given meander has arisen from an animal figure, or whether on the contrary the latter has not been evolved by the introduction of a few strokes or points in the articulated scroll.

We would once more lay stress on the total absence of all motives derived from the vegetable kingdom.

Plate 101 executed by Herr A. Weiss; 102—104 by Fräulein M. Hennig.

PLATES OF PART XII.

124. Costumes of the Inca Period . . . . . Plate 101
125. Human Forms and Ornaments derived from them . . . . . „ 102
126. Animal Forms and Ornaments derived from them . . . . . „ 103
127. Geometrical Figures and Ornaments derived from them . . . . . „ 104

XIII.

PLANTS AND FRUITS

(PLATES 105—107)

TREATED BY

PROF. DR. L. WITTMACK.

Plates 105—107 exhibit the most important objects of vegetable origin, which were found in the graves, some in baskets, nets or gourds, some in the wrappings of the mummies.

Alimentary substances are represented most prominently, and especially those rich in starch-flour, the first place being taken by maize, the staple of food amongst the ancient Peruvians. To it are devoted the whole of Pl. 105, and the greater part of Pl. 106, and should any doubt still arise regarding the home of maize in America, it would be removed by the numerous finds in the graves. Specially important in this connection is the fact that the maize occurs, not only in loose grains, but also in numerous cobs, thus giving us an insight into the varieties at that time cultivated. We find partly the common maize still universally grown, partly the sharp-grained, and lastly the umbilicate variety.

The common maize is figured on Pl. 105, Figs. 1—4, Pl. 106, Figs. 6 and 7; the sharp-grained on Pl. 105, Figs. 5—9, Pl. 106, Figs. 5, 8, 9, 10—12; the umbilicate on Pl. 105, Figs. 10—12, and Pl. 106, Fig. 4; transitional forms from the sharp-grained to the umbilicate on Pl. 106, Fig. 1; from the common to the sharp-grained and umbilicate on Pl. 106, Figs. 2 and 3.

From a similar variety, apparently of Mexican origin, known as "beaked maize" (Zea Mays rostrata Bonafous), the sharp-grained (Zea Mays peruviana Wittmack) differs by having the points, not divergent, but imbricated. My conjecture in the explanation of Pl. 105, Fig. 5—9, that this group appears to be now extinct, should perhaps no longer be upheld, a statement having since reached me from Chile that the same or at least similar kinds are still grown in that country. According to Körnicke (Handbuch des Getreidebaues I. 378) they are also still cultivated in Peru.

On Pl. 106, Fig. 13 is shown an abnormal specimen, the male bloom of the maize plant with some grains.

The next most important alimentary substance, manioc root, *Jatropha Manihot L.* which very soon after the discovery of America found its way to all the tropical lands of the earth, and which, for instance, in Africa now plays a chief part, is figured on Pl. 107, Fig. 14.

A third article of food rich in starch-flour, the roots of the *Batata, Convolvulus Batatas L.* is shown on Pl. 107, Fig. 18, and on Fig. 19 the composed starch grains of the same.

A fourth, the *Quinoa*, the extremely small seeds of an orach *(Chenopodium Quinoa)* whose grains are unusually rich in starch flour and still much used, is figured on Pl. 106, Fig. 20. In the longitudinal section, Fig. 20c, *w* indicates the internal albumen containing starch flour, *k* the ring-shaped germ encircling the same and lying close under the husk. In the mummy wrappings are found whole twigs of the orach with foliage and fruit.

Of leguminous plants specially cultivated were the ground-nuts, *Arachis hypogaea L.*, which at present are also a chief object of cultivation in Africa. Figured on Pl. 107, Figs. 4 and 5.

As regards the history and geography of cultivated plants, the most valuable find were the the beans, not however so much the large Pallar beans distinguished by their radial stripes, *Phaseolus*

Pallar Molina (Pl. 107, Figs. 6—9), as the common kidney beans, *Phaseolus vulgaris L.* shown on same Plate, Fig. 10—13. Hitherto the garden beans (string beans, phasels, French beans, sweet pea) were almost universally supposed to be of Asiatic origin. But the finds in the Peruvian graves, and the researches prosecuted since the preparation of these Plates, seem to place it beyond doubt that *our garden beans come from America*. Meanwhile by Asa Gray and Hammond Trumbull also (American Journal of Science, 26 (1883) p. 130 et seq.) America is expressly declared to be the home of the bean; and Friedrich Körnicke ("Zur Geschichte der Gartenbohne" in Verhandl. des naturhist. Vereins der Rheinlande und Westphalens 1885, Bonn 1886, Separatabzug p. 1) also adopts this writer's view. In this connection Körnicke examines the question, what then the ancients could have understood by *phaseolus*, and concludes that it was the Dolichos melanophthalmos, as in fact a Dolichos had already been suggested by this writer.

Of fruits there were found in the graves examined by Reiss and Stübel:

1. The *Lucuma* (pronounced luc'ma), *Lucuma obovata* H. B. K. (Pl. 107, Figs. 21—30). In the explanatory text it is described as "probably Lucuma splendens D. C. or L. valparadisaea Molin, which is perhaps identical with it." But the enquiries since set on foot warrant the inference that it is rather L. obovata H. B. K.. Pl. aequinoct. III. p. 241 (Achras Lucuma, Ruiz et Pavon, Flor. Perav. III p. 17 t. 239), especially as L. splendens is grouped with the doubtful species by de Candolle himself, although he describes the fruit as like that of the horse-chestnut. — But after all L. obovata and L. splendens may be identical. To this plant should probably be referred a quantity of foliage from the wrappings, which Freiherr Const. von Ettingshausen has determined as belonging to the family of the Sapotaceæ.

2. The *Guayava, Psidium pyriferum* L. (P. Goyava Raddi), a familiar tropical fruit, especially preserved as a jelly (Pl. 106, Fig. 17). According to de Candolle, Origine des plantes cultivées, p. 195, it is probably indigenous from Mexico to Peru.

3. In some sense *Inga Feuillei* D. C. vulg. *Pacay*, Pl. 107, Fig. 31, may also be regarded as a fruit, as the sweetish pulp of its pods was eaten. The leaves of two species of Inga (according to the determination of von Ettingshausen) occur in masses in the mummy wrappings, and amongst them is probably this species.

Apart from the beans, vegetables are limited, as far as appears from the finds of Reiss and Stübel, mainly to gourds, Cucurbita maxima Duch. and C. moschata Duch. (Pl. 107, Figs. 15, 16). But their occurrence, like that of the garden beans, is all the more important that hitherto this order had been almost universally regarded as belonging exclusively to the Old World. Recently both Alphonse de Candolle (Origine des plantes cultivées, p. 204), and Asa Gray and Trumbull (loc. cit.) have given America as the home of some species of gourds. But de Candolle refers especially to Cucurbita Pepo, the common pumpkin, while still regarding the Old World as the habitat of C. maxima, the giant gourd, which is now shown to occur amongst the finds at Ancon. — The seeds and fruit of Cucurbita moschata, which were also found, look very like those of C. Pepo; hence many travellers who speak of C. Pepo in America, were perhaps really describing C. moschata.

There remains to be mentioned the Pilgrims' gourd, Lagenaria vulgaris Ser. whose characteristic seed is figured on Pl. 107, Fig. 17. It is so often referred to by the early writers on America, that in my opinion there can be no doubt of its being indigenous both in the New and the Old World.

Important economic plants. Of the widely known Agave and Cotton, which yielded fibrous materials &c, no representations are given. On the other hand Pl. 106, Fig. 14 shows the sprig of a sea-shore grass, Vilfa, which was used in quite extraordinary quantities at least by the coast people to stuff the

space between the mummy and its covering. — In the wrappings was also found a slip of a Bromeliacea (Pl. 106, Fig. 15), probably Tillandsia andicola Gillies, besides the blossom of a Bromeliacea, probably Tillandsia maculata R. et Pav. Mummies with such wrappings would accordingly appear to have been brought down from the hills.

Instead of soap they used the pulp of the fruit of the *soap tree*, Sapindus Saponaria L. (Pl. 107, Fig. 20), whose perfectly round black seeds were worked into necklaces. For necklaces were also used the triangular stones of the fruit of Thevetia neriifolia Juss., and the glossy dark brown pods of Sapota Achras Mill., the latter cut through crosswise. For dyeing they used the leaves of Lafoënsia accuminata, D. C. a Lythracea, the fruit and seed of which are figured on Pl. 106, Figs. 18 and 19.

Associated with the mummies brought from Ancon by Commander Acland R. N. and preserved in Oxford, were also some vegetable remains kindly forwarded to me for identification by Prof. H. N. Moseley — Coca leaves (Erythroxylon Coca Lam.) known to have been chewed as a favourite narcotic; the pierced seeds of a Nectandra? from a necklace (identified by Hr. Hennings); a pierced seed of a horse-eye-bean, Mucuna inflexa? probably belonging to the same necklace; a tuber (its starch in a pasty state); a pod of Inga Feuillei; several fruits of Lucuma obovata and grains of maize. From a Peruvian grave, whose site is not precisely known, collected by Lieutenant Holland R. N. and also preserved in Oxford are some other objects, such as, besides maize bread &c, a square cosmetic pot with four divisions each closed above with cloth tied together. These contain annato (arnatto) pigment and one division even the seeds of the arnatto tree, Bixa Orellana L.

Further details on the vegetable finds in Ancon will be seen in the text of this work. Here also is more fully discussed A. T. de Rochebrune's treatise: "Recherches d'ethnographie botanique sur la Flore des sépultures peruviennes d'Ancon" in the Actes de la Soc. Linnéenne de Bordeaux, vol. XXXIII, 1879, p. 343 (Extract in bot. Centralblatt 1880, p. 1633), where 50 species representing 44 genera and 34 families are described.

L. Wittmack, Berlin.

PLATES OF PART XIII.

128. Maize Cobs . . . . . Plate 105
129. Maize Cobs and other Plants . . . . . „ 106
130. Sundry Fruits, Seeds, Roots &c. . . . . „ 107

XIV.

SKULLS

(PLATES 108—116)

TREATED BY

RUDOLF VIRCHOW M.D. L.L.D. F.R.S.
PROFESSOR OF GENERAL PATHOLOGY AND PATH. ANATOMY.

From the numerous human skulls recovered by Herren Reiss and Stübel from the Ancon Necropolis three were selected for illustration. On Plates 108—116 they are reproduced in natural size, and in the peculiar colour acquired from the surroundings. The drawings, prepared by Herr Eyrich, have been executed after the geometrical method and in such a way, that the various views were taken from one and the same position of the skull in Lucæ's apparatus. It was placed in the so-called German horizont, that is, in a plane passing through the upper edge of the auditory meatus and the lowest point of the inferior margin of the orbits. Hence each two of these views coincide exactly in their external outlines, that is, the anterior and posterior, the upper and lower, the lateral and sectional views. Within the outlines the special points are again geometrically determined but the perspective relations are only approximately indicated by shading.

Cranial drawings have never before been produced with such thoroughness and accuracy; and these may accordingly be accepted as first proofs of a process perfected with much care.

The selection had in view the illustration on the one hand of the typical form of the Ancon skull, on the other of the deviations produced by artificial deformity. But while the latter naturally presented no difficulty, it was found far from easy to select a really normal skull. For even where no *intentional* change of form is perceptible, most of the Ancon skulls betray slight modifications, probably due to unequal pressure against external objects, such as, for instance, might be caused by the position and covering of the still pliant child's head. This is shown partly by the slight asymmetry and obliquity, partly by the faint flattening, or at least the light convexity of the occiput. There are further numerous irregularities in the formation of the sutures and in the process of ossification. From these deviations belonging to early childhood, partly even to fœtal life, must be distinguished the also very frequent pathological changes peculiar to advanced age. Conspicuous amongst these are the thickening and density of the bones, ranging from quite simple states of slightest hyperostosis to complete sclerosis and the appearances of Arthritis deformans. Even where they occur in greater intensity, these latter changes have exercised no noteworthy influence on the shape of the skull. On the other hand it cannot be entirely denied that even the slighter disturbances of the period of early development and infantile growth may have had such influence.

Although not altogether free from any of the above mentioned changes, the skull figured on Plates 108—110 may still pass for a good specimen of the prevailing type. In no direction can any decided influence of these changes be observed on its general appearance. It is orthobrachycephalic, chamaeprosopic, hypsikonchous, hyperleptorrhine, prognathous and leptostaphyline.

The representations of the two following skulls are intended to show the effects of the intentional deformation produced by the application of bandages and systematic pressure. Plates 111—113 exhibit

an example of a moderate, Plates 114—116 of a more aggravated case of this sort. Here we see that even the facial bones have not escaped a certain degree of distortion. Specially interesting are the consecutive synostoses of certain sutures and the increasing diminution of the cranial capacity, which in the several regions is effected in very different proportions, and which has again given rise to compensations by the expansion of other regions. A comparison of both skulls with one another exhibits in a striking way the progress of the deformation.

Rud. Virchow.

PLATES OF PART XIV.

131.	Slightly deformed Skull	Plate 108
132.		„ 109
133.		„ 110
134.	Greatly deformed Skull	„ 111
135.		„ 112
136.		„ 113
137.	Greatly deformed Skull	„ 114
138.		„ 115
139.		„ 116

XV.

MAMMALS

(PLATES 117—119)

TREATED BY

PROF. DR. A. NEHRING.

Zoological objects were not found in all the Ancon graves. The remains especially of dogs and lamas seem to be restricted to certain groups of graves, which are exhibited on Plate 1.

Apart from a pigeon and a parrot figured on Pl. 34a, the zoological deposits were drawn exclusively from the class of mammals. Doubtless a few dried toads were also brought to light during the excavations; but these can hardly be regarded as intentional parting gifts. They had probably burrowed in the ground, as is their habit, and there accidentally met their death in close proximity to the graves. Their shrivelled bodies thus came to be afterwards brought up with the other objects during the excavations. (See the remarks on Pl. 34a, Fig. 3.)

Numerously represented especially are the domestic dog, the lama and the guinea-pig, in a word those animals, which, as we otherwise know, played a leading part in the life of the ancient Peruvians. Remains also occur of a species of rat (Hesperomys sp.), of a fox, a tiger-cat, and a deer of the Cariacus genus.

It may be doubted whether the fox, represented by a damaged skull and a bit of skin, as well as the species of rat, represented by the remains of four specimens, are to be regarded as intentional deposits, or as the relics of later intruders, which burrowed in the immediate neighbourhood of the mummy packs and there accidentally perished. (See the remark on Pl. 34a, Fig. 2.) The latter was more probably the case with the fox, especially as the state of preservation of its remains is somewhat exceptional.

The above mentioned species of cat is represented only by two pieces of skin, the deer by a damaged antler. The latter seems to have for some time lain on the surface of the ground, for it looks as if bleached by the sun.

Most important are obviously the remains of the dog, lama and guinea-pig. That they belong to deposits intentionally made there can be no doubt at all.

The specially remarkable objects of the last mentioned animal remains will be found reproduced on the following Plates with the greatest possible accuracy. They are figured partly in the state in which they were found when exhumed, partly also in the state to which they were reduced for the purpose of scientific investigation.

On some of the dog-mummies the remains may still be noticed of a coarse cloth covering; whether the rest were also originally wrapped in cloth can no longer be determined. The hair has in most cases been remarkably well preserved. Its prevailing colour may be described as a uniform reddish yellow or yellow ochre. In some specimens, however, there also occur brown and black-brown spots and irregular drawings on the yellow ground of the skin.

One of the dog mummies, which is already figured on Pl. 34a with completed head (very defectively executed as regards the dentition), shows an interesting method of binding, the head and four feet being tied together with an artistically platted string made of agave fibre. The dog mummy

figured on Pl. 117, Fig. 1, does not seem to have been subjected to this kind of treatment, exhibiting to some extent the attitude rather of a sleeping dog.

The lama is represented by six skulls and two fore-legs. To judge from the remains of the hair, which has been well preserved especially on the legs, the prevailing colour of the lamas used as parting gifts was a black brown.

The guinea-pigs show mostly a red-brown coat, partly flecked with yellow-white spots of irregular form. One of them, a young specimen, has the whole body covered with hair of a uniform yellow-white colour. It is very noteworthy that another specimen shows five well developed toes on each fore-foot and four on each hind-foot, while all the rest clearly exhibit the normal number for the Cavia genus — four on the fore-feet and three on the hind-feet.

The original drawings of the three following Plates have been prepared by Herr J. Geissler under my guidance; the skulls have been drawn after the so-called geometrical method.

A. Nehring.

PLATES OF PART XV.

140. Remains of Dogs and Foxes . . . . . Plate 117
141. Remains of Canis Ingæ . . . . . „ 118
142. Remains of Rodents and Ruminants . . . . . „ 119

PLATE 75.

FILLETS.

(1/3 of the natural size.)

Fillets appear to have been in great vogue amongst the ancient Peruvians. Even with the dead such little bands were applied to the front and back of the head, to bind their flowing hair (Pl. 30). In their plastic remains, such as earthenware (Pl. 100, Fig. 10), and dolls (Pl. 80, Fig. 1; 91, Fig. 7), this style of embellishment is prominently conspicuous. Nor is it lacking on the false heads of the mummy packs (Pl. 11, 12, 14, 15, 16, 21). Of the most frequently occurring fillets there are three kinds, one of which consists of a wide, uni-coloured or white cotton band with ornamental ends, specially woven and stitched on, and hanging down both sides of the face (Figs. 1 and 2). The second description (Figs. 11—13), made of cotton rarely interwoven with wool (see Fig. 11), shows stripes of an elegant pattern, and is found not unfrequently in the equipment of the false heads (Pl. 11; 12, Fig. 2; 21, Fig. 9). They were originally perhaps worn across the forhead by people carrying light loads on their back, or were also possibly wound round the waist as girdles for the garments. The third kind (Figs. 3—10) comprises narrow woollen bands mostly broad in the middle, and richly ornamented with bright colours. These are worked like the slings often used as fillets (Pl. 76). In these bands and strings scope is given to invention and skilful manipulation and especially to the use of passamenterie work. Yet another kind of fillet is shown in Figs. 1 and 2 of Plate 76.

Figs. 1 and 2. White cotton fillets found on the false heads. The ends alone are ornamented, often in quite different styles, light figures being interwoven on the brown ground. In Fig. 1 a dog-like animal figure is repeated with peculiar, snake-like appendages to the head. In Fig. 2 a human figure stands on an animal face. Both ends are here so turned as to show both the right and wrong side of the fabric.

3—6. Sling-like fillets. The central piece adorning the forehead is made wide and ornamented with richly coloured wool. In some (Figs. 4 and 5) the central piece is very wide and thick, so that to tie them together recourse must be had to the long band-like extremities. These extremities are either plain as in Fig. 3, or ornamented as in Figs. 4—6. Some finish off in tassels, which in Fig. 4 are embellished with human faces.

7—8. Narrow, but elegantly ornamented fillets, 7 especially showing great diversity of colour and design. These specimens are further split towards the ends, and then in various places again bound up with ornamental stripes.

9 and 10. Tassels and fringes of fillets made of wool.

11—13. Wide bands used as fillets and for carrying light loads, or perhaps also as girdles (Pl. 102, Figs. 2, 3, 5). At the ends of Fig. 11 small bits of stick are inserted in the tissue to prevent their curling up. Figs 11 and 13 consist entirely of cotton, while in Fig. 12 wool is used for the warp. The pattern may be taken as typical for this class of fillets.

Lith. Wilh. Greve, Berlin

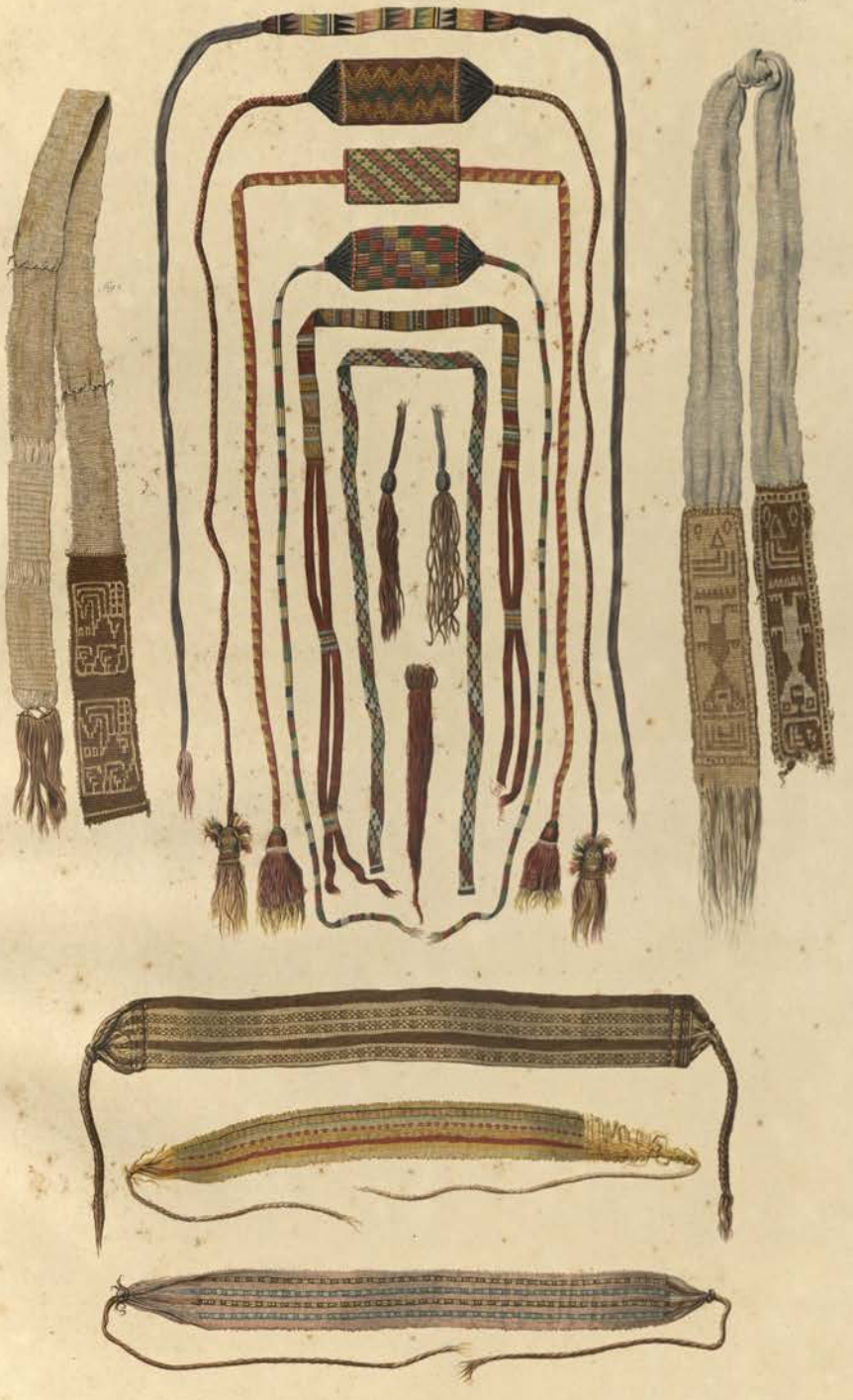

PLATE 76.

I. FILLETS. — CONTINUED.

(1/3 of the natural size.)

Figs. 1 and 2. Essentially different from those of Plate 75. They consist of skeins of thick woollen threads about 3 meters long fastened in the middle by a short piece of cloth. The threads may possibly have been originally plaited together, although this cannot be determined in their present state.

II. SLINGS.

(1/3 of the natural size.)

Slings with the accompanying stone projectiles were found in a great many graves. The stones were mostly preserved in the pouches figured on Plates 73 and 74, or else deposited with the dead wrapped in cloth. The slings themselves were observed amongst the parting gifts, although most commonly used to bind up the long hair of the departed. See Plate 30, Fig. 7.

It was seemingly the custom of the old Peruvians to use the slings as fillets, a practice still surviving here and there in Bolivia, and which has the advantage of having the weapon always at hand in case of need. This twofold use of slings explains the occurrence of numerous transitions, so that it is often difficult to say whether the object is a fillet or a sling. They are mostly very tightly and artistically plaited strings tapering towards both ends and with a special arrangement in the middle for the reception of the projectile. Two kinds of slings may be distinguished. In one the wide central portion itself is formed of the flexible strings used in making the whole weapon, and then a support is afforded to the stone by introducing a mesh. See Figs. 3—6, 11, 13. In the other a thick stiff central piece of wool or even of leather is inserted, both parts of which are but slightly strained by the stone. One end of the string is always looped for the finger, while the other, which is freed with the sling, tapers to a fine point. Wool, cotton and human hair were used in making the slings, although the most usual material was the fibre of the agave (cabuya), or also perhaps of a bromelia (pita). Such slings are not seldom elegantly wound round with bright wool. Where these ornaments occur on one side only they always lie on the looped side, which intended to be held fast.

Figs. 3—6. Slings with netted central piece, 3 and 6 with bright woollen ornaments. In 4 and 6 the looped end of the string is attached to the central piece.

7—10. Slings with stiff and slightly yielding central piece, all more or less ornamented; 9 made partly of human hair.

11. Small sling of the same type as Figs. 3—6. Childs' toy or model.

12. The elegantly ornamented woollen band woven on either side to strings for slings should apparently be included amongst the transitional forms between slings and fillets.

13. Sling tied up, as found on a mummy's head: the net of the central piece is made of human hair.

14. Simple sling in the form in which it was attached to the head of the dead.

15. Sling with elegantly covered central piece.

PLATE 77.

HEAD-GEAR AND ACCOMPANYING FEATHER ORNAMENTS.

(1/3 of the natural size.)

Coverings for the head with their ornaments have already been illustrated with the individual mummies and false heads of Plates 14, 16, 18 and 21. A few objects of this sort are here reproduced on a larger scale than was there possible.

The Indians buried in Ancon do not seem to have used hats properly so called. Even caps, such as some of those here figured, appear to have been somewhat exceptional, to judge at least from their rare occurrence. A string or fillet sufficed to confine the thick hair, which afforded ample protection from the inclemency of the weather. Still there were worn certain round-shaped head coverings varying in height, such as are still much in vogue amongst the Indian tribes of the central tributaries of the Amazons. This crown-shaped straw hat is extremely well adapted for the display of a feather decoration, consisting either of an artificially prepared plume, or else of separate feathers inserted between the interstices of the plaiting.

Fig. 1. A white plume, the several feathers of which are strung together on a common plaited stem.

2. A large, many-coloured feather ornament. Here also each feather is fastened to a plaited band by fine threads. These bands are joined together in a thick pad, which forms as it were the stem of the plume.

3. Flesh-coloured plume.

4. Blue plume.

5. Large plume, the feathers of which are attached to the plaited bands with human hair; hence the dark, almost black colour of the bands near the quill of the feathers.

6. Red plume.

7. Cap woven of coarse worsted, covering the top only of the head, with ear-straps.

8. Broad woollen cap woven in the form of a pouch.

9. Pointed woollen cap of a many-coloured pattern.

10. High hat-shaped head-dress of hard straw piled up in thin pads, which are stitched together with thick worsted. The worsted is disposed in regular stitches, so as at the same time to serve as an ornament. Hats of an exactly similar description are still made of Paramo grass (ichu) by the Indians of the Cordilleras.

11. Narrow round-shaped head-dress plaited of soft rushes (totora).

12. Narrow fine plaited straw fillet of elegant open workmanship braided as a ribbon and then sewn together. Separate feathers are introduced as ornaments into the open strips. This form corresponds exactly to the tendona still in use amongst the Jivaros of Ecuador.

13. A similar fillet of somewhat simpler workmanship, with feather inserted.

14. A thick, heavy almost felt-like cap, platted of broad bands of Llama wool.

PLATE 78.

EAR-PENDANTS.

(Natural size)

The fashion of attaching ornaments to the ear, and piercing the lobe for the purpose, seems to have been somewhat widespread amongst the ancient Peruvians. In Ancon also ear-pendants frequently occur, if not always on the bodies themselves, at least as parting gifts inside the mummy-packs, or as embellishments of the false heads (Plates 18, 21, Figs. 4 and 6). Three kinds of ear ornaments may be distinguished. First, short wide cylinders, diameter not exceeding 4 cm. with an open-worked and decorated disk at its upper end. The disk, either of wood (Figs. 1—5), or of baked clay (Figs. 6—10), serves as the ornament, which is secured by the wide cylinder to the artificially distended lobe. There also occur conic wooden plugs (Figs. 11—13), whose base is diversely ornamented with mother-of-pearl or with feather mosaics, tapering off in a kind of peg for insertion in the lobe. The third description of plugs seems to have been intended only for the sepulchre — a cheap trinket suitable for the false head (Figs. 14, 15). The large cylinders were partly wound round with cotton thread, and strings were fastened to the conic plugs.

Figs. 1—4. Carved wood cylindrical ear ornaments, each plug made of a single piece. Figs. 2 and 3 give side and reverse views of the same cylinder, which in Fig. 2 still shows the cotton winding, while in Fig. 3 an animal figure may be detected resembling Fig. 1. In the central parts of Figs. 1 and 4 are seen cruciform figures. In 1 the rim is open-worked, in 4 the ornament only indicated in relief.

5. Wooden cylinder, on whose disk a thin copper plate has been stamped in such a way as clearly to reproduce the carved ornamentation. This represents a distorted human figure encircled by animal heads, the whole being enclosed by an open-worked rim.

6—10. Cylindrical baked clay ear ornaments. In four of these the central portion is occupied by one of those animal figures which we have met in the textiles, and again on the earthenware objects. In Fig. 7 a cruciform design is produced by four human figures with convergent heads. The open-worked rims are either simply vandyked, or else show a continuous ornament of conventional birds run together.

11—13. Cone-shaped ear-plugs made of a light wood. In 11 bits of mother-of-pearl are let into the under surface; in 12 and 13 large plates of mother-of-pearl are stuck on with wax which in 13 is still embellished with black lines.

14—15. Frequent ear ornament of the false heads (Plate 18). The outer rim of the plug is formed by a strip of bast thickly coiled round. The inner space is filled up with a star-shaped ring of like description bent into shape, and with a large number of thin reed-stalks, which are so thrust in as to form a smooth surface with the bast rings on the exposed side of the plug, while often projecting unevenly on the inner side. Apparently prepared only for honouring the dead, this frail ornament can scarcely have been of any practical use.

Rosas u. Bridel Ancon

Lith. Wilh. Greve Berlin

PLATE 79.

NECKLACES AND BRACELETS.

(⅓ of the natural size.)

Associated with nearly all the mummies are necklaces and bracelets, either used in decorating the body, or else stowed away in cloths and workbaskets. The plainest ornaments of this description consist of unplyed worsted often wound round arms and ankles, and forming rings such as are figured on Plate 28, Fig. 5. Others occur in every possible gradation of richness. Shells and berries pierced and strung together are most common; of rarer occurrence are clay beads or hard stones and mother-of-pearl also pierced through. The thin cords on which were strung these pearl-like objects (mullu in Quichua = a pearl or a perforated stone), are mostly decayed, so that the whole ornament has in few instances only been preserved. Some specially noteworthy necklaces are here reproduced.

Fig. 1. A row of large and somewhat irregularly cut shells forms the central portion of the necklace, at both ends of which are attached little pieces of shell.

2. A large necklace consisting of drilled bits of shell and sticks, between which are strung carved spoons of the same substance and human teeth. The central section is remarkable for the two beads (one only is seen in the illustration) which follow the large pieces of shell, and which are made of fluor-spar.

3. A rich mother-of-pearl necklace. On a strip of cotton cloth the ornaments carved out of thin mother-of-pearl scales are disposed in regular figures.

4. A necklace formed of a fishes' backbone, to which had been suspended a perforated patella (4a) as a central ornament.

5. A double necklace of fine cord, on which variously coloured pieces of shell have been strung. At both ends are strings richly adorned with shell pearls.

6. Fragment of a necklace or bracelet, remarkable for the large sodalite beads, which are strung on between the shell "mullus".

7. Fragment of a necklace or bracelet. A piece of shell and a spoon carved out of shell are strung on a cord with two very hard and somewhat irregularly cut bits of stone.

8. A large necklace consisting of pieces of shell, perforated berries and perfect shells of cypridæ.

9. Large necklace, in which fragments of dentalite are bound together with pieces of shell.

9a—e. Ornaments belonging to the necklace, Fig. 9, the arrangement of which cannot now be determined. The two animal figures consist of mother-of-pearl; the three ring-shaped ornaments (presumably spindle-stones) of burnt clay.

10. A mother-of-pearl bird, piece of a necklace.

11. Small spindle from a necklace.

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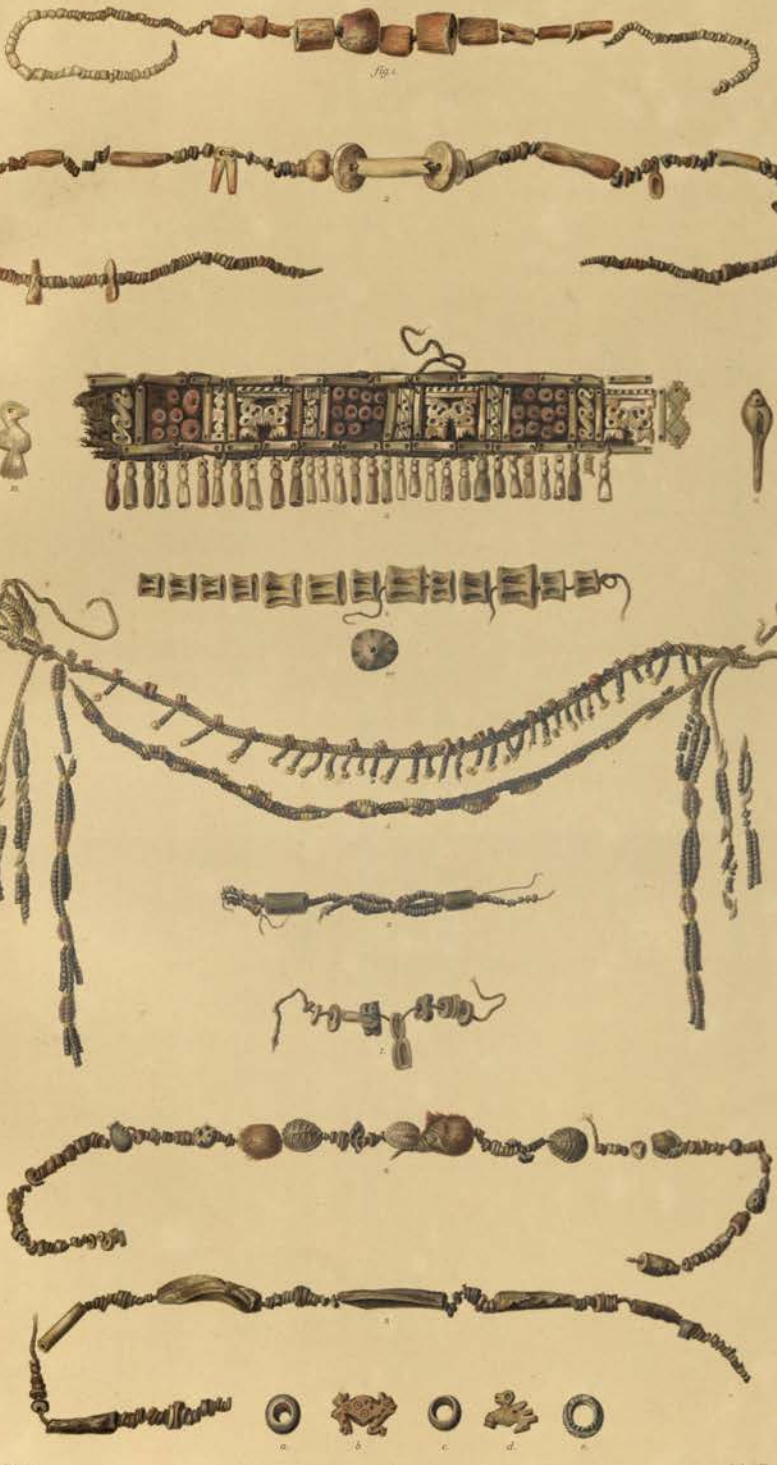


Reiss u. Stübel Ancon

Lith. Wilh. Greve Berlin.

PLATE 80.

DIVERSE FANCY AND ORNAMENTAL OBJECTS.

(Figs. 1—9, 14—32 = 1/1; Figs. 10—13 = 1/2 of the natural size.)

Figs. 1 and 2. Front and reverse of a carved hartshorn figure. It represents a kneeling Indian, whose expression combined with the position of the left hand, which is placed on his heart seems to suggest an act of homage. The head is decked with a high crown of feathers, and the face entramed between two suspended fillets. Otherwise the figure is undraped. Flowing down from the head-gear, the hair is collected behind in five tresses and gathered together in a buckle-shaped clasp. The attitude is skilfully adapted to the curve of the antler, whose lower end serving as a pedestal is drilled through. This carved object was found on the breast of a child-mummy.

3. Conic vessel made of a thick shell. Of the three pieces originally composing it two only have been preserved. They show a harmonious carved design, which is distributed in three superimposed fields. In the lower field is repeated the oft recurring animal motive couched like a cat, the intervening spaces being occupied with snake-like heads. A front view of the same animal appears in the narrow upper fields, while the central strip shows S-shaped snakes with heads at both ends. At their angles above and below the shells are laterally drilled for stringing together the several parts.

4. Wooden bowl in the form of a bird, painted red and black; found in a work-basket.

5—9. Pieces of necklets made of baked clay; 5 and 6 are spindle-whorls; 7 represents an Indian hut; 8 a phallus (?); 9 a two-headed animal figure.

10—11. Necklaces, the former made of small kernels, the latter of regularly shaped round little disks, black and white alternating in the central part. The black are of wood, the white of shells.

12—16. Detached pieces of necklaces and armlets. Fig. 12 of baked clay; 13 shells of the mermaid's trumpet and polished kernels; 14 bones; 15 baked clay; 16 soft stone that may be cut with a knife; apparently lithomarge.

17—28. Bits of drilled stone, some very hard; were found singly as specially valued pieces in necklaces and bracelets. The boring is most by very narrow, but always most carefully executed. Some retain their original form, others are but slightly worked, while completely finished pearls or disks are rare. Most of the pieces (16—20, 24 and 25) consist of tinctured impure opal, specific gravity 2.0—2.15, hardness 6. The conic forms (Figs. 22, 23) appear to be pieces from a lode yielding malachite; 26 is silicated copper; 27, which is shaped like Fig. 8, is cut out of a soft silicious clay, and 28 is of white marble. For these mineralogical determinations we are indebted to Professor H. Fischer of Friburg.

29. Large piece of opal, drilled in two places, beautifully ground and polished, with a central groove.

30. Half of a bean, pierced through; from a necklace.

31 and 32. Baked clay whistles, which when blown emit a shrill sound; 32 a phallus (?); both drilled for suspending.

Reiner u. Stübel. Ancon.

Lith. Wich. Grosse. Berlin.

PLATE 81.

METAL UTENSILS AND ORNAMENTS.

Wrought metal was taken in relatively small quantities from the graves. The useful and ornamental objects that have been found, proved to have been made of copper, silver, or alloys mainly of these two metals. In two cases lead also occurred, and excavations subsequently carried out by others appear to have even brought to light a considerable number of gold objects.

Figs. 1—8. $\frac{1}{2}$ of the natural size. Pincers partly of copper (Figs. 2 and 4); partly of silver or of rich silver alloys. The small elastic nippers served apparently for plucking out the hair of the body and beard, many also as ornaments for necklaces. The pincers are slightly curved like a saucer, doubtless to increase the resisting power of the metal, which is often very thin.

9, 9a. $\frac{1}{2}$. Small dish made of silver-plate bent together, with the stone mallet found in it.

10. $\frac{1}{2}$. Feather-like ornament of thin silver-plate, originally riveted to a silver head-dress (Lhasto).

11—13. $\frac{1}{2}$. Chased basins of copper (Figs. 11 and 13), and silver (Fig. 12). The ornament of the rim of Fig. 12 is incised with a sharp instrument. From the black earth graves (Plate I).

14—17. $\frac{1}{2}$. Thin silver-plate armlets more or less richly embellished. In Fig. 14 the holes drilled through for passing a string are visible. Fig. 14 comes from a child-mummy, and all were found on the arms of the dead.

18, 20 $\frac{1}{2}$. 19, 21 $\frac{1}{2}$. Round and partly ornamented thin silver-plate objects, which served as ornaments stitched to the dress.

22, 23. Finger-rings of silver and rich silver alloy (Plate 30, Fig. 14). The ends of the simple hoops are either soldered or merely beat together.

24, 25. $\frac{1}{2}$. Hollow silver beads intended to be strung together; each is made of two soldered halves.

26 $\frac{1}{2}$. 27—29. $\frac{1}{2}$. Silver tubes serving as ornaments for necklaces. In Figs. 27 and 28 the method of fastening is still perceptible. In Fig. 29 the tube is bent over. The incision in the middle of the upper part served probably for setting a bead.

30. $\frac{1}{2}$. Silver neck-clasp. The elastic metal band was fastened by interlocking the two bent ends.

31. $\frac{1}{2}$. Solid copper bead pierced vertically, representing a human head and face.

32—34. $\frac{1}{2}$. Copper fishing-hooks.

35. $\frac{1}{2}$. Copper spatula.

36, 37. $\frac{1}{2}$. Needles, the eyes of which are formed by hammering out and bending round the wire.

38, 39. $\frac{1}{2}$. A round and a prism-shaped bead.

40. $\frac{1}{2}$. Lead ball, with a piece of mother-of-pearl let firmly into the upper surface.

41. $\frac{1}{2}$. Bar of roller-shaped lead.

42. $\frac{1}{2}$. Hematite cone, apparently used as a smoothing-stone in preparing fine implements.

Photo v. Rudolf Arnim

Lith. Wilh. Greve Berlin

PLATE 82.

CALABASHES AND BASKETS.

The hard resisting shell of the gourd was diversely utilised in making vessels, adapted either for holding liquids or preserving dry substances. Such vessels occur in the most varied forms and sizes, from the capacious bowl (Plate 15) down to the smallest and daintiest gourd flask. Pear-shaped fruits are frequently split in two, in such a way as to produce vessels of the bowl type with suitable conic lids. In such cases the two parts were made to shut tightly by dovetailing tooth-fashion one in the other. The shells of larger fruits served to make vessels of the dish and plate classes. But smaller, cylindrical vessels, suited for keeping powdered substances, and especially pigments, were supplied by the stalk ends of the gourds (Figs. 2 and 3), one mouth of which was kneaded up. As a rule the larger bulging vessels display no outward embellishment, whereas the outside of the open shells are distinguished by dainty designs, durably applied either by painting, scratching or even burning into the smooth brown rind.

Baskets of small size occured comparatively less frequently. They consisted mostly of rather pliant wicker-work, and were fitted into calabashes or clay vessels, although also serving as an outer protection and covering for such vessels (Plate 34).

Fig. 1. (1/4 of the natural size) Small unornamented gourd flask.

2. e.c. Neck of a gourd made into a vessel by inserting a bottom. The narrow mouth closed by a small plug-shaped lid fastened to a string. The vessel is tied by a double cord to a clay figure.

3. e.c. Small vessel like Fig. 2.

4. e.c. Pear-shaped gourd, the upper part of which serves as cover to the vessel made from the lower part. The incision between the two is so carried out, that two projections from the lower fit into excisions in the upper part, thereby making it secure.

5. e.c. Small gourd flask, coloured black and embellished with scratched ornaments, which are here exceptionally smeared with a red pigment.

6. e.c. Shallow bowl provided with narrow painted border, which, as is so often the case, consists of two like halves not meeting together.

7. e.c. Small, deep bowl, richly ornamented. A row of birds encircles the rim, bird figures also forming the main feature of the wide band of incised ornaments disposed in compartments.

8. e.c. Broken bowl with in-burnt ornament.

9. e.c. Deep bowl with two wide ornamental bands, disposed in three alternate fields.

10. e.c. Fragment of shell with black painting.

11. e.c. Faded fragment of a shell with bird ornament.

12. e.c. Fragment of a shell with rich black painting.

13. e.c. Gourd bowl with little basket inserted, over which another is fitted as a cover.

14. e.c. Little basket with black stripes.

15. e.c. Flat wicker plate found as a cover on a gourd full of provisions (Plate 34).

Kuss u. Bubel. Aquar.

Lith. Wilh. Greve. Berlin

PLATE 83.

SMALLER ARTICLES.

(Figs. 1—10, 13, 15 = 1/3; Figs. 11, 14 = 1/2; Figs. 12, 16—20 = 1/4 of the natural size.)

Fig. 1. Deep, sharply carved wooden spoon, of shovel form with long handle.

2. Flat wooden spoon with short broad handle.

3. Small shovel-like wooden spoon.

4. Wooden spool pierced lengthwise to hold a peg round which it could turn in winding up the spun thread.

5. Bits of reed for keeping powdered substances. The bottom is formed by the cellular wall, while it is closed at top by a cotton plug. Such objects were placed in the hands of the dead, and these contained white or red dyes used in painting the face and body.

6. Two small tubes like the foregoing, bound together with cotton thread. This is the most usual form and size of the paint-boxes found with the dead.

7. Bone flute or pipe.

8. Comb made of the splinters of the hard Chonta wood, and fastened to two cross pieces by a cotton plaiting.

9. Two small Mytilus shells pierced near the tip and bound together with a sort of hinge of cotton thread.

10. Small box made of the neck of a gourd, with inserted bottom and lid.

11. Fine net containing several balls of fine cotton thread, and with a needle stuck through as in Fig. 13.

12. Human hair collected in a tress and bound round with thin threads. In this way many Amazonian Indian tribes keep small quantities of human hair to be worked into strings or ornaments.

13. Sewing needle made from a large thorn.

14. A kind of wooden bodkin with bent point and black ornament.

15. Large bodkin made of a pointed bone.

16. Small brush of animal hair for dusting the mill-stones. Similar brushes are still in use.

17. Mytilus shell containing a red pigment (cinnabar); a frequent offering to the dead.

18. Shells of this species of spondylus are often found in the mummy packs either singly or joined in couples both in the work-baskets and pouches and wrapped in cotton.

19.—24. Sundry stone objects mostly pestle-shaped. Fig. 19 consists of a brown slaty stone with ring-shaped incisions at both ends. Fig. 20 has the form of a chisel, and the rest served doubtless for grinding diverse substances such as pigments, lime for Coca &c., the very grindstone itself being shown in Fig. 22. The few stone objects found here show but slight traces of workmanship, an exception being Fig. 5, of Plate 84. Fig. 20—24 consist of the greenstone occurring at Ancon in masses and loose fragments.

Reuss u. Stübel. Amer.

(Fig. 1–26 ½ n. Gr. Fig. 27–29 ¼ n. Gr.)

Lith. Anst. Gebr. Berlin.

PLATE 84.

WOODEN WEAPONS AND IMPLEMENTS.

(1/3 of the natural size.)

Amongst the wooden objects weapons and implements of large size are rare while smaller utensils connected with domestic industries abound. No great skill is betrayed in their execution, which reveals both the imperfection of the instruments used in making them and a deficiency of suitable materials. The dearth of timber in the whole district sufficiently accounts for the care taken to preserve small wooden objects, and even straight or crooked, broken and seemingly utterly useless pieces of wood, which are found collected in bundles and laid in the graves. The wood required for implements and household purposes had to be brought from a great distance.

Fig. 1. A bow broken in two pieces, made of the hard round parts of the Chonta palm: both ends pointed the easier to fasten the string. The few recovered specimens do not enable us to decide with certainty whether they were broken on account of their size, in order to find room in the grave, or whether the practise had any symbolic significance. (See also Fig. 4 on this Plate.)

2. Two rude arrows tied together, their heads of harder wood attached with cotton thread.

3. Club-shaped object bound up with two arrows.

4. Spear of hard wood with diamond-shaped point, the central edge of which is cylindrically raised.

5. Long wooden shaft, on the thick end of which a stone weapon of the „Morning Star" type is inserted and fastened with some cotton stuff. The six-rayed stone star, here found once only, is elsewhere in Peruvian graves by no means rare.

6. Club-shaped stick, in preparing which the natural notches and prominences of the wood have been utilised; the stem only partly preserved.

7. Staff of the Thyrsus type.

8. A kind of shovel, apparently used in husbandry.

9—18. Wooden implements in a more or less finished state; Figs. 13—17 are undoubtedly weavers' bats, and the other rods must also have been used in weaving. (See Plate 28.)

19. Fragments of a staff made of Chonta wood.

20—23. Small wooden implements, some bored to be hung up or fastened with strings.

24. Heavy bludgeon.

25. Wooden instrument entangled in a net and found in the calabash figured to the left of the mummy on Plate 15.

26—28. Netting meshes used in making nets.

29—30. Club shaped bats, probably used in preparing aloe fibre thread.

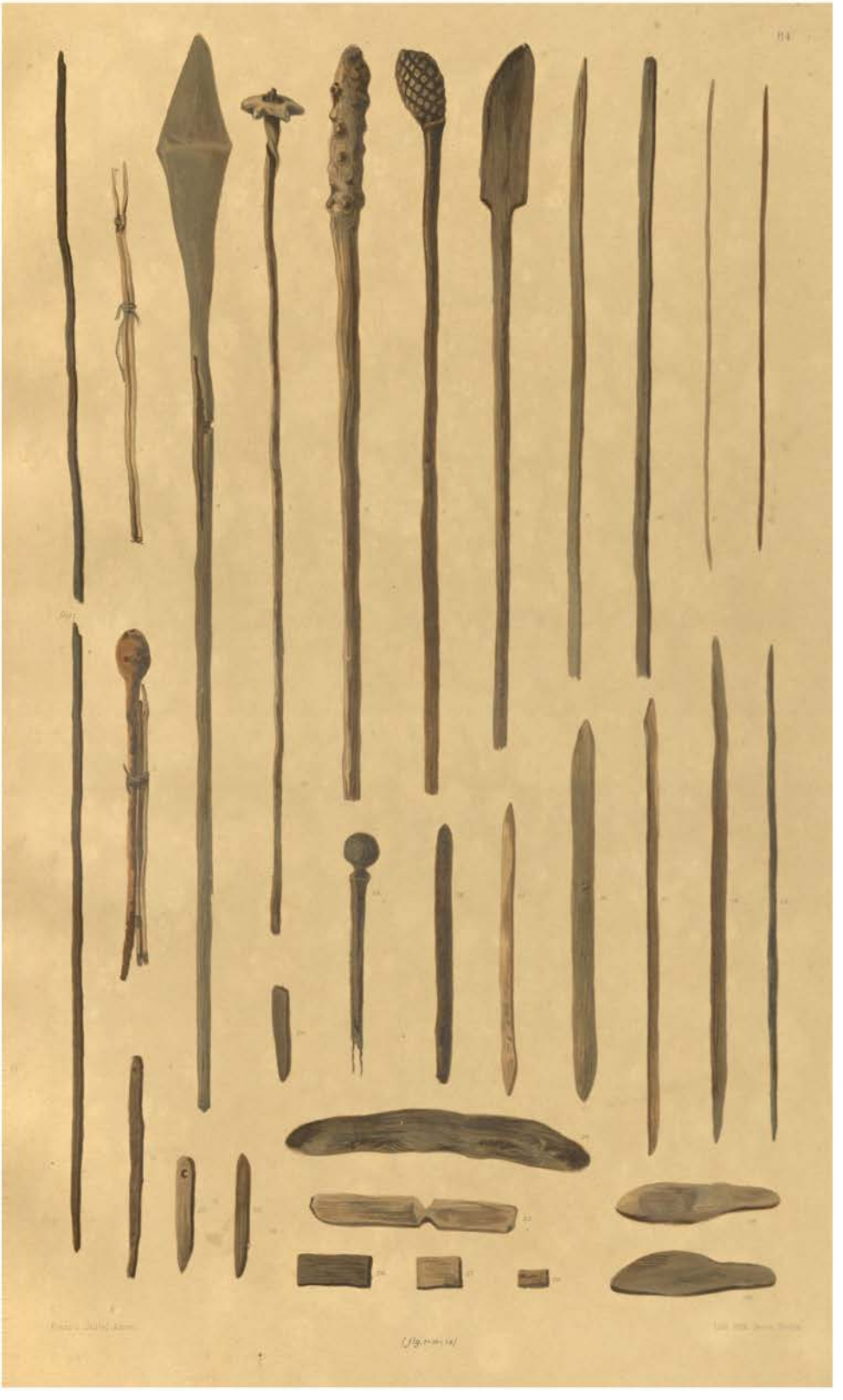


PLATE 85.

FINE WOODEN IMPLEMENTS; WORK-BASKET.

(Figs. 1–9 = 1/3; Figs. 10–17 = 1/4; Fig. 18 = 1/4 of the natural size.)

Weaving and embroidering implements as well as those required for making fine and coarse fabrics and nets, occur in great variety. The preparation of the yarn, dyeing, winding and sorting necessarily presuppose a considerable number of instruments, although doubtless of simple form. Amongst these must be included the rods here figured, which are partly embellished with carvings and painting.

Figs. 1—4. Long round rods ornamented towards the ends with carved figures. The central piece is cylindrical, while the two extremities marked off by the carvings terminate in rather long conic points. Fig. 1 shows the whole rod, the end pieces only of the rest being figured. The ornamental motives here employed are either human or animal figures, often highly conventionalised. Nor are the figures at either end of the same rod always of like design (Figs. 3, 3a). In Fig. 1 we have a strongly conventionalised conic face resting on the back of an animal; in Figs. 2 and 3 a bird and mammal respectively; lastly in Fig. 4 a human form still showing evident traces of having been brightly painted.

5—7. Similar rods, but so far differing from the foregoing that the simpler carvings occur only near one end, while the rods themselves are embellished by black lines burnt in. The face of the human figure in Fig. 5 has been destroyed. The bust inserted between shaft and point of Fig. 7 is replaced in Fig. 6 by an ornament of a spiral type.

8. Shorter rod sharpened at both ends, and embellished with rings and spirals burnt in.

9. Thin spindle-rod wound round with green yarn, served apparently for passing the threads in weaving.

10—17. Winding rods made of three pieces. The middle piece consists of a tube, in which are inserted right and left the little rods (Fig. 10, a and b) made of hard wood. The tubes are mostly embellished with elegant designs, either simply painted on, burnt in or incised. The little inserted rods themselves are often similarly ornamented (Figs. 11 and 13). In Figs. 16 and 17 stone whorls have been fitted, in one case to the little rod, in the other to the tube. The rods are sharpened most carefully at both ends. They often produce the impression as if the points had even been polished, and as if the tube were intended to preserve them. Winding rods were also frequently found containing such a quantity of yarn as often entirely the conceal the central piece.

18. Work-basket made of bits of split reed fastened together by means of a cotton thread so interlaced as to show a regular design on the outer surfaces. Such work-baskets, which served to hold spinning implements and other small objects, were prepared in various sizes and of diverse materials (Plates 54, 86, 88).

Verlag v. Dietrich Reimer.

Lith. Inst. Berg. Berlin.

PLATE 86.

SPINDLES AND WORKBASKETS.

(Fig. 1 = 1/5; Fig. 2 = 1/10; Figs. 3—18 = 1/1; Fig. 19 = 1/2; Fig. 20 = 2/3 of the natural size.)

With the dead were deposited the implements used in spinning and sewing even more frequently than the woven materials themselves. Whole bundles of such objects are found either packed in baskets or cloths, or else stitched into the cerements of the mummy. The spindles themselves are unquestionably amongst the most elegant and tastefully ornamented articles of ancient Peruvian industry that have been extracted from the Ancon district.

Fig. 1. A work-basket, plaited of reed-grass, used as a receptacle for spinning implements and other objects of daily use. The half-open cover gives a view of the contents. On top are some beautifully painted spindles, below them some finely carded cotton tied up in conic bundles, spindles with the twisted yarn, various objects wrapped in small pieces of cloth, and quite in the corner the projecting head of a clay figure (plate 100, Fig. 10).

Besides such objects the work-baskets, which are seldom absent from the graves, also contain sewing needles and bodkins, balls of thread, tufts of wool or cotton, fragments of bright threads and tissues, small stones and metal wares, bits of stick, dye-stuffs, shells and grains of maize, neck-ties, finger-rings and many other trifles, besides wooden and clay figures (see Plates 89—91). There is seldom wanting a pretty little wooden or clay dish, tho' it seems to be here and there replaced by a flat shell. Figs. 9—11 of plate 100 present specimens of these dishes, which may have served as supports in turning the spindles.

Fig. 2. Besides the work-baskets, which occur in various sizes and styles (see plate 87), pouches were also occasionally used to keep the spindles. Here is represented one of these pouches, made of cotton with a design interwoven.

Figs. 3—17. Spindles in the natural size. The shank is of a hard wood, very smooth and regular. Attached to them, as weights and whirls, are terra-cotta cylinders or balls whose surface, whether smooth or broken by deep lines and drawings, is always aglow with rich ornamental colouring. The painting is even continued on either side of the whirls to the adjacent part of the wooden shank. The careful and highly coloured decoration of this implement is all the more surprising that when in use it is concealed from view by the thread wound round it.

Fig. 18. A spindle of quite a simple type, made of a somewhat irregular piece of wood, and to which is suspended a short reed cylinder as a whirl. But even this sorry implement is abundantly ornamented with black and red rings.

Fig. 19. A spindle round which a large quantity of yarn is wound.

Fig. 20. A bunch of cotton tied up in a conic form, such objects being evidently laps, or their remains. Tufts of this sort were also often attached as tassels to staves wrapped in bright coverings, such as are figured on plate 32.

Reiser u. Skibbe. Ancon

Lith. Wilh. Greve. Berlin

PLATE 87.

SUNDRY SMALLER ARTICLES; FOOT CLOTHING.

(1/2, 1/3 and 1/4 of the natural size.)

Fig. 1. Weaving utensil (?) formed of rather wide sticks spun round with wool and a lattice of thin Chonta rods evenly spaced as in a carding-comb. The number of Chonta rods inserted between the broader laths cannot be accurately determined, as the apparatus while being extracted from the mouldering mummy-pack fell almost entirely to pieces. But there can scarcely have been more than ten. The rods had been firmly bound together with threads both above and below, and in the centre.

2. Rods of greater length and oval in section are wound round, as in Fig. 1, with many-coloured wool, and connected at one end by a strip of cloth to which they are stitched. This contrivance, whose purport is unknown, probably consisted originally even of a larger number of such rods.

3. Weaving-band made of bone, notched with great regularity on one side with 15 indented triangles, such as form a frequently recurring motive in textiles. Object unknown. Lengthwise round this notched band was wrapped a fine unfinished net, rendering it very probable that it had been used for knotting fine meshes.

4. Plaited reed-grass pouch in which, besides the foregoing article, were also kept small sticks wrapped in thread.

5. Wooden block provided with two holes drilled at the corners obliquely through to the adjoining side. Tied round it is a short red string widened in the centre. Use unknown.

6—9. Carved cone-shaped pieces of wood, such as were found in many graves amongst the parting gifts, and especially amongst the contents of the bags and nets. Use hitherto unascertained.

10. The same object in stone.

11. and 12. Rods used as needles, furnished at one end with an eye.

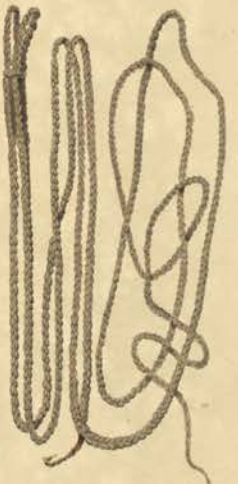
13. Curved bone weaving-band.

14. and 15. Wooden weaving bands with carvings and drillings, the latter apparently for passing strings to suspend them.

16. and 17. Sandals of untanned leather (sealskin?), with remnants of the strings. For one a hairy skin is used. Sandals of a different kind are figured on Plate 88, Figs. 3 and 4.

18. Portion of a leather sandal, artistically interlaced with strips of leather.

19. Model of a bridle for llamas. Both strings, ending each in a noose, which here appear tied together, served for fastening in the pierced ears of the llama. Where both reins unite in one leading-string, twine with a red tip is attached as an ornament. This model would seem to have served as a toy (see Plate 88).



Lith. Wilh. Greve, Berlin.

Hanns u. Stuhel, Berlin.

PLATE 88.

DOLLS' CLOTHES AND TOYS.

(Figs. 1–4 = ⅓, Figs. 5–6 = ½ of the natural size.)

Toys were placed with the bodies of children, just as implements, household utensils, weapons and ornaments were deposited with adults. In the cerements of the small mummy-packs are found especially dolls, human and animal figures, carefully wrapped in cotton and cloths, like the infant bodies themselves. But diverse domestic utensils of daily use, and on a reduced scale, were also given to the children as playthings. Some of the dolls may have been dressed (Plate 90), while others, treated as children in swathing-clothes, are made fast to the wooden frame representing a cradle (Plates 89, 90). Here we are also reminded of the small clay vessels figured on Plate 100. Amongst the small representations on this Plate, which look almost like models, the sandals give us a noteworthy insight into the contemporary style of covering for the feet, and thus complete the information derived from Plate 87.

Fig. 1. Striped cotton doll's dress consisting of a single piece, which is folded together and sewed up on both sides as far as openings for the arms. The shape corresponds exactly to that of the garments figured on Plate 36, Fig. 1.

2. Doll's dress of a simple cotton fabric, which looks brown from decay.

3. Sandals tied together, see No. 4.

4. Sandal-shaped foot covering, the soles formed of tightly pressed strips of Agave (Cayuba) fibres plaited into tresses. Such sandals, or so-called "Alpargates", are still worn. Here they are tied up together with a child's sling.

5. Doll's cradle made of bits of stick. How these frames were used is shown on Plates 23 and 90.

6. Small workbasket made of reeds, resembling those of Plates 85 and 86. The contents consisted of a few cloth remnants.

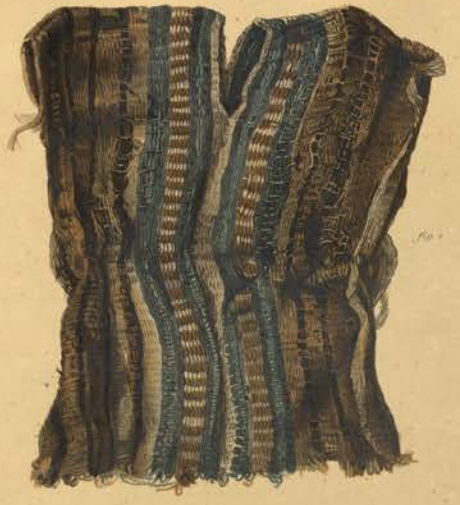


PLATE 89.

DOLLS AND ANIMAL FIGURES.

(Figs. 1—5 = 1/3; Fig. 6 = 1/6; Figs. 7 and 8 = 1/8 of the natural size.)

Amongst the commonest finds are dolls and other small figures. Numerous especially are those of burnt clay (Plates 90 and 91), while others are carved in wood, and quilted with wool or cabuya (Agave). Notwithstanding their idol-like appearance most if not all of them must have served as Children's toys. They were usually found in the mummies of children, and in fact inside the cloth or cotton wrappings, a few only occurring in the work-baskets or in the parting gifts made up in bundles for adults. Animals also were modelled for similar purposes (Fig. 6). But it is doubtful whether we should regarded merely as playthings the burnt clay llamas (Figs. 7 and 8), which belong essentially to a special group of graves, although their equipment with halter and bridle would seem to suggest such an application. These parting gifts also were treated with great care, being consigned to the grave wrapped in cotton and swathed in cloths.

Fig. 1. Female figure carved in full form from wood. The large nose stands well out, while eyes and mouth with its teeth are indicated by lines scratched in. The toes are suggested in the clumsy feet, and the body is still partly wrapped in the cotton with which the whole figure was covered.

2. High relief figure lying on a cradle (Plate 90), the whole carved out of one block of wood. The figure has been planned on too large a scale for the frame, for the head instead of resting in the cradle projects beyond it. The wrinkles about the mouth impart an earnest expression to the features. The nose is very prominent, and a head-dress of the tendema type covers the crown and forehead. The body is rudely executed, and the slender arms with their large six-fingered hands are especially remarkable. A string attached to the cradle served to hang up the toy.

3. Thin board, whose outlines suggest in the rudest manner a human figure. The nose alone projects fully, eyes, mouth, arms and hands being scratched in.

4. Fragment of a small toy made up of cotton threads, the inside stuffed with rags.

5. Remnant of a large doll plaited with straw.

6. Large male llama quilted with woollen threads, a small llama attached to its side by a string wound round the body. Figs. 4—6 must have served as toys for very small children.

7. Burnt clay llama still partly wrapped in the cotton in which it was enveloped when taken from the grave. A black and white cotton cord ending in a long guiding string serves as halter and it is noteworthy that then as now bridles were passed through the pierced ears of the llama. Remarkable are the large white spots on the clay figure, not at all appropriate to the llama.

8. Smaller llama just like Fig. 8, but lacking the white spots. Here the bridle was suggested in the clay, but the merest fragment has been preserved. Both figures (7 and 8) are hollow, the inner space communicating through small round openings with the surrounding atmosphere, whereby a swelling of the form in baking was avoided.

Knaus u. Stahel-Aarau. [fig 1-2-3a, fig 4-5, fig 6-7-8.] Lith. Wilh. Greve. Berlin.

PLATE 90.

LARGE CLAY FIGURES.

(1/3 of the natural size.)

However difficult it may often be to distinguish figures used as dolls or as ornaments from idols and others of a sacred character, there is scarcely room for any doubt in the present case. These clay figures served as children's play-things, or perhaps as fancy objects. All three were originally dressed, and two of them are further distinguished above all other similar plastic objects found in Ancon for their size, the delicacy of the material employed and their careful execution.

Fig. 1. A clay figure in a long, woollen garment fastened round the hips by a girdle, and falling far below the feet. A slit in the upper part of the dress leaves room for the head, while spoon-shaped hands attached to the shoulders (see Plate 91, figs. 1—4) project through the sleeve holes. Two tassels of dark blue cotton thread hang in front from the neck, while the back is covered by a sort of black cloth robe fastened by strings over the breast. (Plates 41 and following). The large flattened head is painted a dark red; the forehead is black and a black streak also runs obliquely across the lower part of the face. The head-gear has been lost. The Indian woman thus arrayed bears on her back a bundle tied up in some woollen material, in which are packed some small ears of maize. The clay figure itself corresponds altogether to the doll represented in Fig. 2.

Fig. 2. A figure made of fine clay, the arms and hands of which are merely suggested by black-stained furrows and very slight reliefs. The face shows traces of painting, perhaps tattooing. The nose is adorned with an elegant design, and the chin with a dark stripe like a bandage. On both sides of the face are large ear-plugs, and a simple device indicates the neck-collar. Four small openings on the upper side of the broad-flattened head served to fix feathers, shells and other ornaments, such as are represented in Fig. 2 of Plate 91.

The dress of this doll was destroyed through carelessness, when it was exhumed.

Fig. 3. Clay figure of an infant in swaddling-clothes, strapped to a wooden frame representing the cradle. This toy, found by the body of a child, illustrates the way in which the ancient Peruvians treated their offspring during infancy, thus affording a clue to the manners and customs of those times, which is all the more valuable that there is here question of a custom common to so many American nations.

The board or portable cradle, composed of thin laths, and a few cross pieces, is bound together with cords. The figure, wrapped in clothes, is fastened to this frame with narrow straps, even the head being bound down by a band drawn over the forehead. The pressure suffered by the head of the children thus strapped down must have been one of the causes of the cranial deformation so frequently met with, and to a greater or less extent characteristic also of the skulls found in Ancon.

A doll's cradle is figured on Plate 88; a wooden doll and cradle on Plate 89, and a real cradle here used as a coffin with the body of an infant, on Plate 29.

PLATE 91.

SMALL CLAY FIGURES.

(Figs. 1–9 = 1/5; Figs. 10–14 = 1/3 of the natural size.)

Small clay figures as toys are frequently met. But as regards careful execution they are mostly inferior to the large doll figured on Plate 90. Nearly all have disproportioned heads, and the limbs, wherever at all standing out and not merely indicated in relief, are made as strong as possible. Both sexes are represented, the female seems to be preferred. Bright painting, dyed thread tied on, and suspended shells served to deck and complete the toy, which was made either of red or black clay. The figures are hollow, provided with air-holes, and partly at least cast in moulds (Fig. 13). The dolls could be partly dressed as in Fig. 1, Plate 90.

Figs. 1 and 2. Front and side view of a painted figure. The large head flattened behind is covered with a low painted cap (tendema, Plate 77), pierced at the upper edge and decked with a shell suspended by a string, apparently the remnants of some originally more ample embellishment. The ears are also pierced. The face shows traces of painting, and paint also suggests the small poncho, through the side slits of which protrude the spoon-shaped arm-stumps. Round the legs is twined a bright woollen thread.

3. Doll, like Fig. 1, but of somewhat ruder workmanship. Round the neck runs an ornamental band; two breasts are roughly indicated, and besides the spoon-shaped continuation arms and hands are also executed in very rudimentary fashion. The face is painted and the clothing suggested by coloured stripes.

4. Thin figure kneaded in a very rough and ready way from a piece of clay. Here also the perforations served to attach finery.

5. Small compact figure with very large head and scarcely indicated lower limbs.

6. Black clay doll with child-like expression; long trunk, short stout legs; a cotton string tied round the neck.

7 and 8. Side and front view of a large figure, distinguished from the others by its carefully modelled head and expressive features. The bodily form also seems remarkable. At the first glance we might fancy it represented a hunch-back, such figures being only too often thus indicated. But it is really an Indian bearing a load in the native way wrapped in a cloth, whose corners knotted over the breast he holds fast in both hands (Plate 90, Fig. 1). The undraped figure is decked with a high hat pierced at the edge, and with ornamental fillet and straps hanging down at the sides.

9. Doll executed in extremely childish fashion.

10. Small black figure with high pointed cap, perforated and embellished with attached woollen tufts. A few red lines set off the outlines of the dark figure.

11. Roughly kneaded clay figure.

12. Doll, like Fig. 5.

13. Figure in its form recalling Figs. 7 and 8. Through the weathering action of salts the surface has been corroded, leaving nothing but the rough form, which however clearly reveals its composition of a front and back half.

14. Small flat figure from a work-basket. Sharply defined features, large ears and tendema as head-dress. The spoon-shaped arms drilled at the juncture; fingers like Fig. 10.

Rasse u. Stichel. Ascon.

PLATE 92.

LARGE CHICHA VESSEL.

On the hills of black loam forming the central portion of the Necropolis there is no lack of indications that this district was formerly occupied by a settled population.

Amongst them, besides the already mentioned millstones used in grinding maize, are the large buried vessels which served to store Chicha.

In order to promote the fermentation of this favourite drink the practise still prevails in many places of burying large earthenware jars in the dwellings, in such a way that the mouth projects within a small raised space in the floor faced with brick or stone.

A vessel of this description and of unusual size is here reproduced. It was found in the deposits in the central part of the Necropolis abounding in kitchen refuse. The jar was walled round by air-dried bricks (adobe) and in a perfect state of preservation. The side hole was made while searching for graves by the probe, which easily pierced through the earth covering into the vessel.

On the thick bulging sides were attached two small and elegantly turned handles apparently more for ornament than use.

PLATE 93.

BLACK EARTHENWARE VESSELS.

(1/5 of the natural size.)

Here are represented black clay vessels, mostly of the jug type, and of various quality both as regards material and execution.

Fig. 1. Thick-ribbed vase apparently representing a fruit of the melon species, with smooth neck and two handles of different size, the smaller ornamented with a maize cob.

2. Thin elegantly shaped jug, with conic body, slim neck and two handles near the base. Under the projecting rim of the expanded mouth are two appendages pierced doubtless for the insertion of strings. One of these is missing, the corresponding portion of the rim having been broken off. The only ornament of the otherwise smooth surface is a boss with a face rudely suggested.

3. Very thin hard-baked jug with handles and flat bottom. The outer surface disposed in diagonal fields by means of lines scratched in; neck enclosed in a serrated pattern. As in Fig. 2, ears have here also been applied to the broad rim of the mouth for introducing strings.

4. Fragment of a drinking mug, made of fine clay and representing an Indian female water-carrier. The Indian type is betrayed in the features, while the manner in which the vessel here serving as the neck of the mug is borne on the cloth thrown over the head as a protection from the sun, corresponds completely with the custom still prevalent amongst the Peruvian Indians.

5. Large, round vessel with wide funnel-shaped neck; the lower portion compressed to the form of the segment of a cone, for standing safely.

6. Tolerably thick vessel, with curved neck and a figure in relief, half bird half human; neck surrounded by an ornamental beading; handle broken off.

7. Simple vase of the bowl type.

8. Vessel of a typical and frequently recurring form, of which the characteristic feature is that the body is connected with the neck only by a hoop-shaped tube, which also serves as the handle. On the broad surface a dog or animal of the feline species is rudely executed in high relief. (Compare Plate 97, Fig. 5). On both sides of the mouth are two pieces attached and pierced to receive strings.

9. Small vase with face and arms, which seem endeavouring to encompass the inflated body.

10. Two recumbent animal figures forming a common receptacle; neck and handle combined as in Fig. 8.

11. and 12. Small, neatly executed vessel, the neck forming a human head, whose mouth is represented by the hat. The horizontal and vertical lines scratched in would seem to suggest the usual painting of the features which are very partially executed. As in Figs. 2, 3 and 8 the largely pierced ears may have served to fasten the strings for suspending the vessel. In this vase specially noteworthy are the four small figures, two reposing right and left on the shoulders, two facing each other and adorning the handle. All four are represented prone and quite flat, the heads alone standing out in high relief.

Kraus u. Stübel. Ancon.

(Fig 1–11 u. 13, Fig 12 u. 14)

Lith. Wilh. Greve, Berlin.

PLATE 94.

FINE EARTHENWARE.

(1/3 of the natural size.)

Besides a large quantity of red and black pottery intended for daily use, there occurs a small number of light coloured vases, a few of which, noteworthy for their form and painting, are here reproduced.

Fig. 1. A fine red clay vase nearly cone-shaped, with a very bulging neck attached. The upper portion of the vase with a thin coating of yellow-white clay, and a few ornaments.

2. The figure of an Indian seated forms the body of the vase, legs and arms being suggested in a very primitive way. The upper part of the body is covered with a poncho with an ornamental design, the head being formed by the bulging neck of the vase. Traces of painting, especially under the eyes, are perceptible on the face which is rather coarsely moulded. The Indian bears on his back a llama, the front part of which appears in the illustration. Such representations are of very frequent occurrence on earthenware.

3. Two-handled vase of red clay with highly-polished surface. The red ground marked with black lines and embellished with figures of birds.

4. Apparently two vases placed one on the other, the upper betraying a finer execution, the lower representing an ordinary four-handled pot. But in reality both are so connected that they form a single vase with a common inner space. Although deceptive vases of ancient Peruvian workmanship are often met, the present example is distinguished by a peculiarly happy style of deception.

5. A red clay vase of characteristic form and colour, with a thin coating of yellow-white clay, which has then been painted violet. The simple painting betrays a firm and skilled hand.

6. Similar to Fig. 5, but differently toned.

7. A somewhat rude vase, which in burning has shrunk and contracted irregularly. The lower half, which was more exposed to get soiled and blackened, is separated from the upper by a dark band ornamented with little figures of birds in a manner often recurring in textile fabrics. In the centre of the front part is introduced a fully executed bird design.

8. A goodly sized two-handled vase, which has also suffered in the burning. As in nearly all vases, the painting is adapted to the various parts of the object. The bulging body separated by dark rings from the neck, is divided into a front and a back section, as conditioned by the handles facing each other. Each of these spaces thus marked off is broken by broad lines, and in the present specimen specially noteworthy is the decoration of the long neck.

9. One-handled, capacious vase, painted in a simple, but effective style, suited to the forms of the object.

Reiser u. Stübel: Ancon

(fig. 1—4, 5)

Lith. Wilh. Greve, Berlin

PLATE 95.

GRAY EARTHENWARE.

(1/3 of the natural size.)

Fig. 1. Simple dish-shaped vessel with low foot attached.

2. Bowl of elegant form with black inlaid rim. Short crown-shaped foot attached.

3. Basin of the simplest type, footless and lacking all ornament.

4. Small almost globular vessel. From the polar opening run 4 meridional coloured lines. To the front side is attached a bird's head diametrically opposite the tail, while the wings are suggested by small prominences to the right and left.

5—7. Small urns often found with the mummies of children. 6. Double vase.

8. Small deep rudely executed bowl, with flat bottom and vertical coloured lines.

9. Deep round vessel with broad reticulated painting divided by a dark edging into a front and back half.

10. Canteen shaped compressed vessel, with wide bulging neck and two handles adapted for inserting strings. On the darkly painted neck a light strip is reserved into which three bird figures are introduced. Right and left are two projections near the mouth, one of which we still distinctly recognise as an animal head. The painting is continued on to the body of the vessel as a step-like pattern.

11. Curved bowl whose front part shows a border with bird figures. Animal heads projecting right and left serve as handles.

12. Shallow dish with a face suggested on the outer surface by bold pencil strokes, and a brown band-like stripe inside.

13. Double vessel with common inner space, on one side round, on the other tapering to a point, apparently representing a fruit. One broken neck seems to have represented a human figure.

14. Simple bowl; instead of handles a face-like ornament inside.

15. Fragment of a bowl with foot; rim painted light on the front side; a raised animal head at the handle.

16. Vessel in form of a snake's head and face of peculiar type.

17. Beaker-shaped vessel, compressed in the middle, with reticulated design.

18. Fragment of a jug with wide bulging neck and broad handle reaching from the neck to the body. Mouth adorned with broad painted rim, handle with meandering lines.

19 and 20. Fragments of painted vessels.

21. Vessel like 18, but neck with a double bulging; rim and handle painted.

(Fig. 1–21 = 1/3)

Reiss u. Stübel: Alt-Peru

Lith. Wilh. Greve, Berlin.

PLATE 96.

RED EARTHENWARE PARTLY PAINTED.

[1/5 of the natural size.]

Fig. 1. Vessel with double neck (broken), with a human figure and hammer-headed shark painted in white: the lower portion ornamented with a design in relief.

2. Painted dish, which had been broken and repaired before being placed in the grave. The holes for passing through the thread used in mending it are drilled inwards conically.

3. Common vase painted white.

4. Fine, close-grained clay dish with highly polished surface embellished with black and white ornaments.

5. Elegantly shaped vessel with conic bottom. The broken neck restored according to specimens found elsewhere. The front side richly provided with painted ornamental work. The corresponding space on the back is left in a simple light grey colour.

6. Red dish with rim painted white. The fragments of this vessel were found in the dish, Fig. 4, which seems to imply that it was already broken when deposited with the dead.

7. Thick-ribbed, bowl-shaped vase, on each side of which is painted a human face with a large head-dress. The ornaments of this head-dress are represented by five three-fingered hands. This vase had also been broken and mended with wax or mineral pitch before being placed in the grave.

8. Dark and very thick-sided dish, with deep rim ornamentation.

9. Neck of a vase representing a human face.

10. Simple bowl-shaped vase.

11. Bulging vase with flat bottom and deep ornamentation on the hand marking off the neck.

12. Vase with wide mouth and ornamented with sunk lines.

13. Flat globular vase with narrow neck and simply ornamented rim.

14. Vase of a beautiful red colour, representing a fruit.

15. Small vase, each side embellished with two serpentine ornaments.

16. Neck of an ordinary vase, whose sunk ornamentation is produced by the pressure of a sharp pencil.

17. Vase with neck tied up with a double cord.

18. Fragment of an ordinary vase, ornamented in the same style as Fig. 16.

19. Fragment of the neck of a vase; ornamentation effected by pressure of a reed and stippling with a sharp pencil.

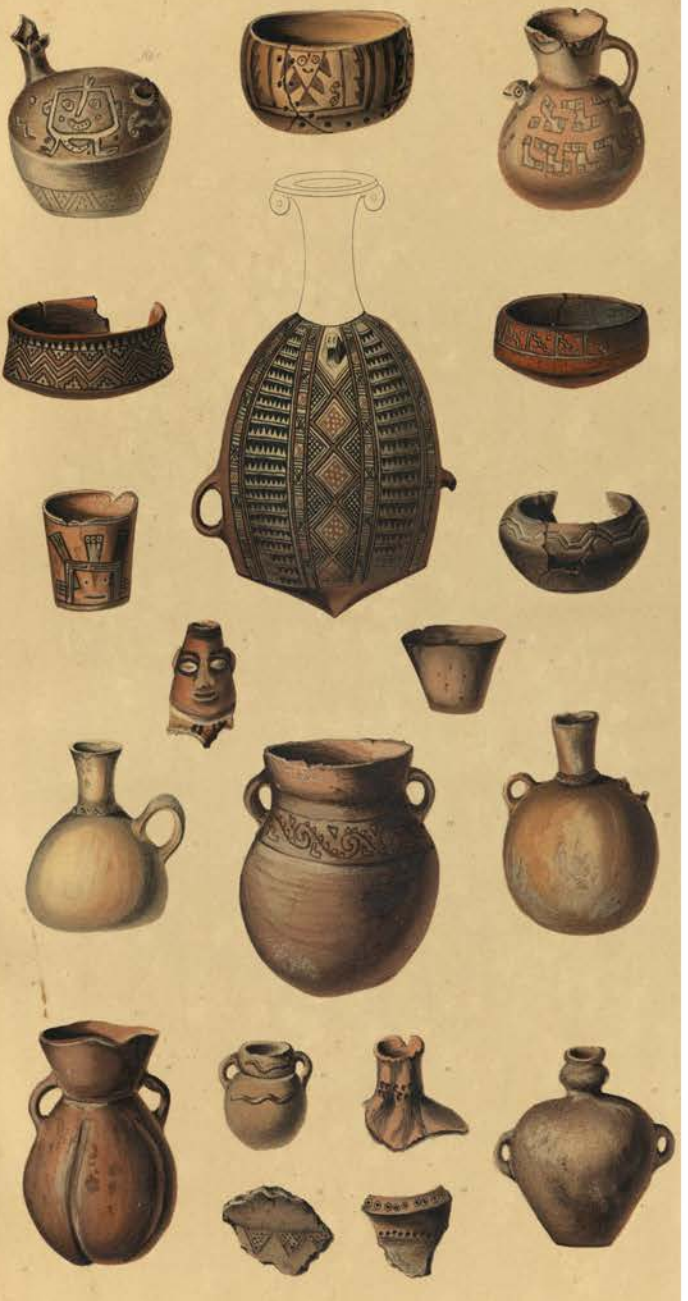


PLATE 97.

URNS WITH HUMAN FEATURES.

(1/5 of the natural size.)

Amongst the most frequently recurring finds in the old Peruvian graves are earthenware vessels shaped after the human figure, or at least embellished with a human face. These objects are in fact the special pride of public collections, and include the most varied transitions from the crudest suggestions of particular portions of the body to the most perfect representations, in which different mental expressions are even reproduced in the play of the features. The Ancon graves have also yielded many specimens of this sort, although mostly of rude execution and inferior material.

Fig. 1. Fragment of a vessel, the neck representing a human head with features like those of Fig. 8.

2. Neck of a double-handled vase, the eyes suggested by circles laid on.

3. Fragment of a vase, with the features worked out in clay.

4. Small clay drinking cup of poor quality, both as regards material and workmanship.

5. Canteen-shaped vessel, the neck showing a human face on either side (Plate 98, Fig. 9); body ornamented in low relief. There frequently recurs the design apparently of some feline animal outlined above with a curved line, both ends of which terminate in snakes' heads. Front and back of the vessel are treated much in the same way.

6. Drinking cup, the mouth of which compared with the bulging lower portion is very large; neck embellished with a face, of which the eyes and ears are laid on.

7. Vessel representing an Indian flute-player adorned with ear-plugs.

8. Large nearly circular vessel. The rudely executed arms with the hands raised to the forehead are supporting the large head. Here the grin on the face arrests attention. There is a frequent recurrence of this motive, which, like the doleful expression also not seldom met with, would seem intended to exhibit the bad effects of too free indulgence in intoxicating drinks.

9. Jug with cone-shaped bottom: face and body of a grotesque type adapted to the form of the vessel: on the back a prominence perhaps suggestive of a bodily deformity. Arms and hands comfortably supporting the paunch: under the rim of the mouth two finely bored appendages for the reception of strings: handles attached low down.

10. Drinking vessel with a quiet earnest expression of countenance; arms and four-fingered hands resting on the rounded body: large ears standing out from the head.

11. Drinking ring representing a carefully executed human figure. Here also the neck of the vessel is formed by the head of the figure, while its mouth is produced by the broad headdress fastened under the chin with a strap. The face shows signs of black painting, and on the ears may clearly be detected the decoration elsewhere concealed by the lobe. A neck-band painted black serves to strengthen the juncture of the head with the enlarged portion of the vessel, which is treated as the body of the figure. The arms and four-fingered hands are suggested in relief, whereas the legs are merely indicated by slight protuberances, which however are marked off in white. To these the projecting feet are bluntly attached.

12. Goblet of very indifferent workmanship; the hands, however, apparently suggested by the spoon-shaped prominences. (Cf. Plate 90, Fig. 1; Plate 91, Figs. 1—4).

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Fig. VII – XI.

Lith. Anst. Wilh. Greve Berlin.

PLATE 98.

LARGE RED EARTHENWARE.

(1/3 of the natural size.)

Fig. 1. Flask-shaped vessel, whose flat circular sides are embellished with a band of wavy lines scratched in. Neck broken off.

2. Flask-shaped vessel with wide neck and two handles. On the edge of the flat side head-like ornaments are applied, while the surface itself, as well as the upper part of the vessel, is embellished with white fields and bands in which black lines are introduced.

3. Conic vessel with sunken meander ornament of the simplest type. The tip is broken off, nor is its use quite obvious. It was found in a grave stuck on a long stick, as were also Figs. 8, 9 and 11 (see Plate 10, Fig. 4; Plate 31, Fig. 9).

4. Double vessel with common inner space. One part represents a simple flask form, the other a human figure; head broken off. Both are also connected externally by a common handle.

5. Double vessel representing egg-shaped fruits.

6. Vessel rudely fashioned in the form of a quadruped. The spout is placed on the animal's back and connected with the head by a hoop forming the handle.

7. Bird-shaped vessel resembling Fig. 6.

8. Thick-sided jar-shaped vessel. To the tied up neck small handles were attached on either side. Found in a grave under the same conditions as Figs. 3, 9 and 11.

9. Beaker-shaped vessel embellished below with animal figures sitting upright. The bottom is pierced with a round hole for the purpose of setting it on a stick, as is obvious from Plate 31, Fig. 10.

10. Bulging vessel with wide opening; conic neck connected by two handles with the vessel itself. The lower part near the narrow bottom is embellished with lines scratched in and head-like ornaments laid on.

11. Vessel resembling Fig. 9, with ornamental band, in which human faces frequently recur connected by step-like graded lines. Used like Figs. 3, 9 and 8 for decorating the grave.

(Fig. 1–3 + 1/4.)

Reiss u. Stübel, Ancon.

Lith. Wilh. Greve, Berlin.

PLATE 99.

EARTHENWARE AND POTSHERDS.

(1/4 of the natural size.)

Fig. 1. Coarse clay urn with human face forming the body of the vessel and thus differing from the urn with face figured on Plate 97. The roughly modelled face is looking out as if from a hood. The extended ears, probably serving as handles, are ornamented with plugs, which are here doubtless inserted in the pierced lobe. A nose ring seems to be also suggested, and the boss on the chin must have apparently likewise indicated an ornamental knob.

2. Small bulging jug of lustrous black clay with a roller-shaped extension introduced between the body and neck. From this intervening piece on one side project the head and hands of a human figure, while the legs are indicated on the opposite side. The neck of the vessel has thus the appearance of being supported by a man lying prone. Three small handles are attached.

3. Black protuberant urn with face, arms and legs very roughly suggested, their attitude representing a seated figure. On its back it bears two clay vessels fastened with a string, the ends of which lie across the shoulders, reaching to the point where the hands should have been placed. The face is rudely executed and displays a beard-like ornament.

4. Cooking vessel sooty with use, with very large opening, and here suggesting an animal, the head projecting on one side, the tail as a short stump on the other. Upper extremities indicated in very primitive fashion.

5. Rudely-formed two-handled vessel, the front side with raised animal figures resembling Fig. 9, Plate 98 and Fig. 1, Plate 100, and enclosed in a two-arched ornament furnished with an animal head — a representation not unfrequently occurring on Peruvian vases. The reverse shows the double arch alone without the two seated animals.

6. Small black coarse clay urn with face. The expression and especially the prominent chin frequently recur on similar vases. Large ear-plugs take the place of the ears.

7. Urn with double face of the janus type; a rare occurrence.

8—13. Potsherds, representing sundry typical forms of mouths of vessels: 10 with a thin coating of white clay, to which the painting is applied; Fig. 11 had got broken, and had been in the strictest sense of the word again stitched together, an artistically knotted string having been passed through carefully drilled holes; 13 decorated with zig-zag lines scratched in and dotted head-like figures laid on.

14—19. Fragments of vessels showing various ornamentations; 14 perhaps a bat; 15 undetermined; 16 a frog; 17 rook (?); 18 maize-cob; 19 duck's head.

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Lith. Anst. v. Gebr. Grove, Berlin.

PLATE 100.

ORNAMENTAL PIECES OF EARTHENWARE AND SMALLER CLAY VESSELS.

(Natural size.)

Besides ornamental sherds of larger vessels, here are figured some smaller objects which are specially noteworthy as fancy ware.

Fig. 1. Pictorial representation on the bulging vessel, Fig. 1 of Pl. 15. The largest portion of the surface is occupied by two human forms, which, to judge from slight bodily differences, are apparently to be taken for a man and a woman. From the position of the feet, both are evidently moving in the same direction, the man following the woman, who is turning her face backwards. Both are similarly equipped. The tendema serves as a headdress, the plumage being represented by long bunches bent downwards and ending in snakes' heads. The figures are grasping at each other, or perhaps holding on by the bundle of snakes. In the hand of the other half-outstretched arm each figure holds an object composed of a thin snake-headed band and a face suspended from it, which in one case is heart-shaped, in the other more in the form of a half-moon. From both mouths is protruded a snake or fish-like animal presumably symbolising speech. The upper part of the bodies is dressed in a poncho, the lower covered by a kind of waistband ending off in snakes' heads. The ear ornament is plug-fashioned. The space between the two human figures is occupied by two long-tailed animals seated in an upright attitude close together and looking at each other. A similar animal fills each corner to the right and left. Precisely the same representation recurs on the back of the vase, which is composed of two parts, and was also found on a black vessel of similar form.

2. Cat-like animal head with open jaws — Ornament of a vessel.

3. Human figure with headdress of two horns; a fringed apron round the waist; hands and feet suggested by engraved touches — Ornament of a vessel.

4. Ape clinging to the neck of a vessel; hand raised to the mouth.

5. 6. 7. Small clay vessels, probably toys.

8. Bird's head, ornament of a vase.

9. Small bowl-shaped vessel with engraved design painted in red and white.

10. Small bowl-shaped vessel held by a seated human figure, which also serves as a handle; head covered with a cap of the tendema type, with straps hanging down and projecting upwards like horns; arms covered with wide suspended ornaments. Both proportion and facial expression unmistakably betray the humoristic conception, which the artist endeavoured to impart to the object.

10a. Reverse of Fig. 10. Here are visible the hair falling down from under the headdress, and the clothing of the body.

11. Fancy vessel like Figs. 10 and 10a; bowl resting on the crossed legs. Noteworthy are the ear-plugs, and the here also recurring horn-like attachments to the head. The bowls represented in Figs. 9—11 were found in the work-baskets figured on Plate 86, Fig. 1.

fig 1

fig 2 - 11 - 12

Kunst u. Druckerei Anstalt.

Lith. Wilh. Greve, Berlin.

PLATE 101.

COSTUMES OF THE INCA PERIOD.

(Fig. 1 $\frac{1}{10}$, Fig. 2 $\frac{1}{5}$ of the natural size.)

The typical representation on this Plate is taken from a clay vase, which was not found in the Ancon Necropolis. It is here introduced only because it is specially suited to illustrate the Peruvian costume of the pre-Spanish epoch, thus rendering more intelligible the use of the garments and other articles of dress figured in this work.

Fig. 1 shows the exceptional form of the vase, which in its technique and painting ranks with the most finished achievements of ancient Peruvian ceramic art. Fig. 2 reproduces in facsimile a warlike occurrence, the figures of which are vividly conceived and grouped artistically together in the available space on the surface of the vase.

The central figure of the group is distinguished by a special decoration, and with him are disposed four warlike forms in symmetrical order. All wear a high, conical head-dress raised still higher by a crescent-shaped decoration. The helmet-shaped hat is strapped under the chin, and shows behind a narrow strip serving either to protect the neck or merely as an ornament. The figures to the left of the observer have this cloth embellished with a coloured design, whereas two other figures wear dark strips of a single colour. Apparently as a mark of distinction the central figure has a similar cloth of extraordinary length, falling from the head over the right side, passing under the right arm across the back, and reappearing on the left side near the point of the lance. Both of the side figures in the central group wear large ear-plugs, such as are mentioned in the old chronicles as special marks of distinction. All are dressed in a long under-garment reaching half down the thigh, and more or less richly ornamented. Over this is worn a short jerkin reaching to the hips, and also embellished with various designs. Both garments are sack-shaped with a slit for the head and two side openings for the arms. They are the prototype of the poncho now universally worn in South-America. Except the central figure all are provided with large ponchos, which recur on all similar designs and are also constantly found in the graves.

Special badges of distinction seem to be the loops attached to the shoulders, the nose-ring of the central figure, the fan-shaped plumes or decorations of the head-gear, and the animal head on the head-dress of the figure to the right of the observer. As weapons the four warriors carry lance-shaped shafts with large crescent head-pieces; but it is impossible to say whether they are flat lances, or heavy clubs of the "morning-star" type. The figure to the right of the observer alone wears a small shield, which is specially remarkable as the only instance of the kind hitherto known to be associated with the Inca period. Legs and arms are all bare, but, like the faces, diversely painted. The physiognomy, and especially the nose, is of the characteristic Indian type.

The original of this facsimile is in the possession of Dr. Macedo, of Lima, and would seem to have come from the Trujillo district.

PLATE 102.

HUMAN FORMS AND ORNAMENTS DERIVED FROM THEM.

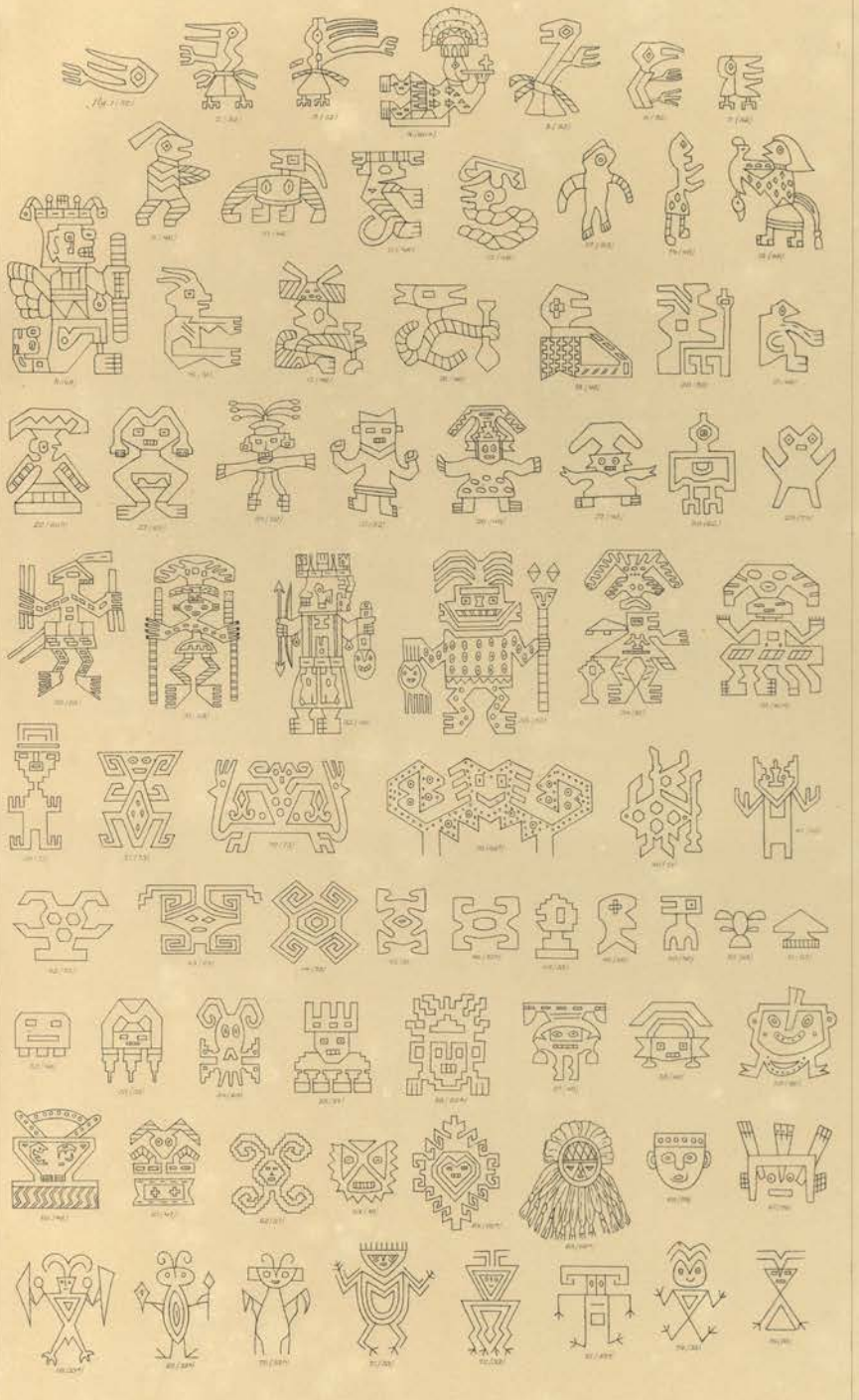
(The bracketed numbers indicate the Plates whence the figures are taken.)

In the textile designs, in the paintings on earthenware and sepulchral tablets, in wood carvings, we everywhere find the human form applied as a motive, now in awkward attempts at a natural conception, now in a far more matured conventional style adapted to the peculiarities of the material in hand. When we survey whole series of such representations, it becomes possible to trace back many otherwise enigmatic motives to their original form, often detecting a human face in what at first sight seemed a mere geometrical figure. Such a comprehensive survey is here attempted, so far as was possible with the scanty materials available. To trace on a broader ground the development of ornamentation amongst the ancient Peruvians will be feasible only when what has hitherto been recovered is largely supplemented by further sepulchral finds.

The central figure of the top row (Fig. 4) represents a recumbent man in a natural although still thoroughly childish conception and execution. In the remaining figures of this row, all distinguished by their beaked heads, a schematic simplification may already be detected, the forms 2, 3 and 5 shrinking through 6 and 7 to a mere head and hand in Fig. 1. Figs. 9, 10, 13—15 explain themselves, although a doubt might possibly arise in the case of 13 with its somewhat animal-like head. — An interesting series of seated forms is elucidated by the fully carried out design of Fig. 8, where we see that the tail-like appendage is to be regarded as an ornament, which in Figs. 17, 18, 11 appears as an essential portion of the body and in 12 is directly attached to the head. Simpler and more intelligible are Figs. 16, 19—21. In the fourth row beginning with Fig. 22, the naturally executed figures stand in the middle (Figs. 25, 26), with forms of a more schematic type grouped on either side. The same arrangement is kept in the next row headed by Fig. 30, where all the figures are carried out more in detail, although partly distorted to caricatures.

The next ensuing rows show how the human form, or portions of it, were treated as ornamental motives. Figs. 36—41 may still be easily recognised, although the conception becomes complicated by the introduction of animal heads at the tips of the lateral bands (Fig. 38), or of what must be regarded as brachial prolongations (Fig. 39). But Figs. 42—51 are already so far reduced, and pass so decidedly into mere geometrical forms, that the general connection can be detected only by a more careful comparative study. Out of Fig. 51, simplest of these forms, is again developed the more richly diversified series 52—59, consisting of heads and lower extremities attached in the form of rests or supports. Further embellishments of this class are shown in Figs. 60—67, all evidently admitting of obvious elucidation from the previous series.

The last row, Figs. 68—75, is devoted to the altogether peculiar designs occurring only on the sepulchral tablets.



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Lith. Wilh. Greve Berlin.

PLATE 103.

ANIMAL FORMS AND ORNAMENTS DERIVED FROM THEM.

(The bracketted numbers indicate the Plates whence the figures have been taken.)

Animal occur even more frequently than human forms as ornamental motives, and geometrical designs transformed to animal figures constitute a characteristic feature of old Peruvian ornamentation. Yet notwithstanding such extensive application of these figures, comparatively few species are represented in the designs, the same forms continually recurring. Beyond a couple of quadrupeds and some few birds, distinctly new forms are met only in isolated cases.

Fishes, on the whole of rare occurrence, are grouped together in Figs. 1—7, where 5, apparently a roach, shows a highly humanised face; Fig. 7 a mere band with fish-like pattern. Of mammals two species occur most frequently, and these in the schematic or conventional designs greatly resemble each other, while easily distinguished when caracteristically represented. One is an ape-like animal (Figs. 8—14), the other a kind of dog (Figs. 16—24). In both the tail (Figs. 10 and 21) occasionally becomes transformed in a peculiar way to an animal head. Pure profiles are rare, the animal being mostly drawn with its head turned towards the observer. The full face becomes easily changed to an ornament (Figs. 8. and 23, 24). To which group 15 belongs cannot be determined. — The fourth row (Figs. 25—32) gives a further series of these animal types, with transitions to purely textile patterns. — The next series (Figs. 33—41) is of extremely simple design, the same animal here recurring under three different aspects (Figs. 35, 37, 38). The species can scarcely be determined, only 33 and in the following row 42 undoubtedly represent the llama and deer respectively. The series next ensuing (Figs. 44—48) already merge completely in mere ornamental motives, and belong partly to the peculiar patterns, which are found specially developed on the pouches or wallets. In 49 an animal form is suggested by a few strokes, whence in 50 we get a simple ornament from which 51 and 52 may easily be derived. The group of mammal motives closes with 53, a design deduced from animal heads, such as is figured several times on Pl. 104. It belongs to the simplest step-meanders, whose indentations are skilfully utilized for heads corresponding to Figs. 17 and 23.

In the numerous designs embellished with bird-forms (Figs. 54—70) comparatively few distinct figures occur. The most characteristic is the Condor (Figs. 54—56), from which the motives 57 and 58 have also been developed. Birds of the duck and stork types, Figs. 59 and 69, are met amongst the schematised forms, and are often disposed like climbing birds running up obliquely inclined stems. A blending also occurs of bird bodies with the faces of quadrupeds, Fig. 65. The forms become distorted, Fig. 73; joined two and two together, Figs. 75—79; lastly lose their individuality altogether, gradually degenerating to a mere ornament. — The connection between bird and geometrically patterns may be further studied on Pl. 104.

The last six figures of this Plate are partly intended to show how apparently highly intricate motives may arise from the diverse treatment of the several parts of a simple geometrical design (Figs. 80 and 82). A few striking examples are further given of geometrical designs transformed to animal figures, Figs. 84, 84 and 85. Lastly in Fig. 83 we see carried out the surface pattern of that stripe ornament, which may be regarded as the most intricate of those designs where the surface is completely filled in by the dovetailing of congruent figures.

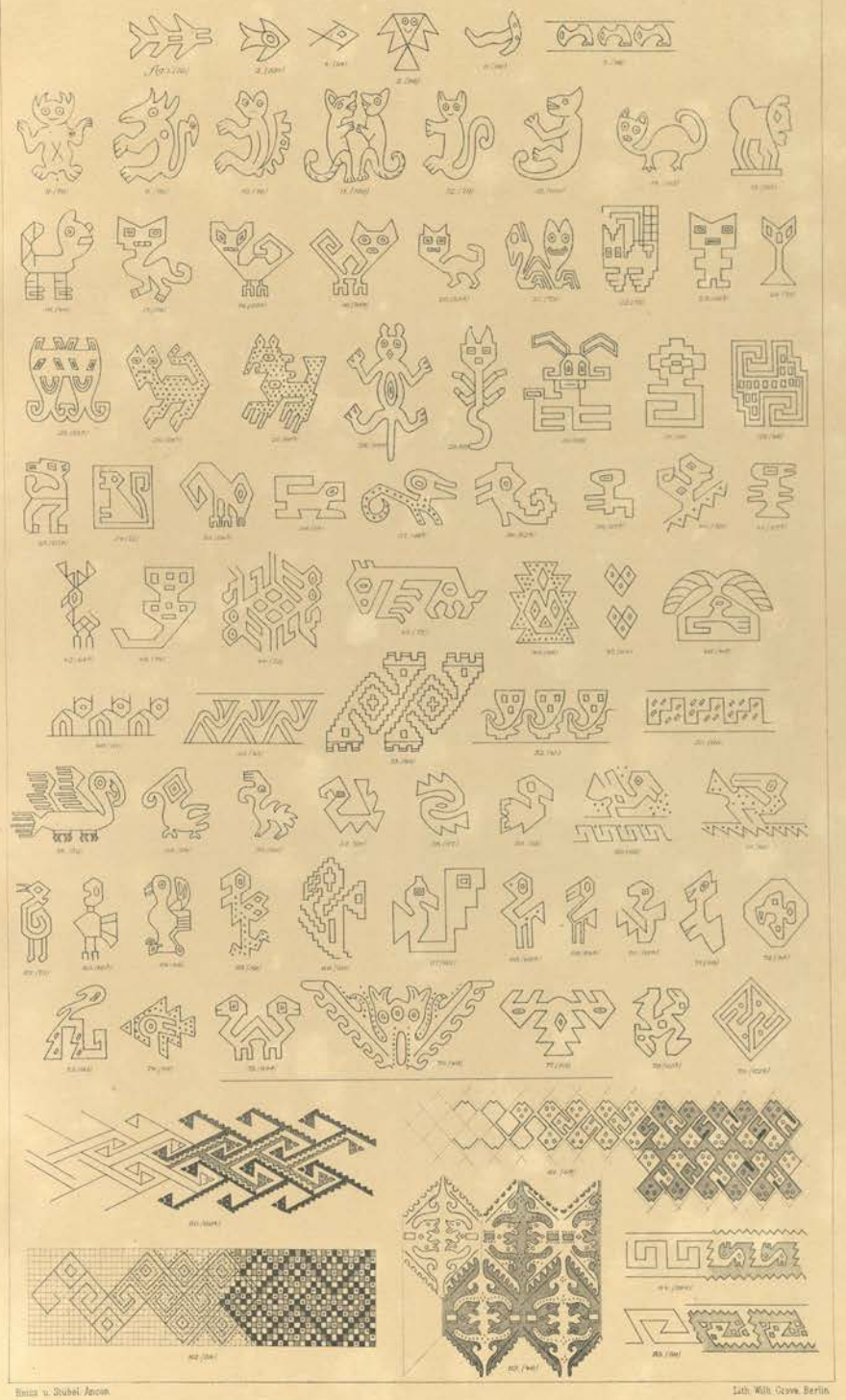

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PLATE 104.

GEOMETRICAL FIGURES AND ORNAMENTS DERIVED FROM THEM.

(The bracketted numbers indicate the Plates, whence the figures have been taken.)

The motives derived from geometrical figures seldom occupy very large spaces. They mostly serve to ornament borders, or form narrow stripes round and between the animal ornaments, and even here their original outlines are mainly further modified by the introduction of animal heads &c. They consist chiefly of quite simple lines, which, ascending and descending, dispose narrow surfaces in two corresponding stripes (Figs. 1 and 2); or lines which are often graded like steps, as required by the technique of weaving (Figs. 4, 6, 9 &c.). From the zigzag lines are developed on the one hand the meanders, some simple, others complicated (Figs. 6—15), on the other the wave lines in all their diverse combinations (Figs. 16—22). Both series are transformed to an animal motive often by slight changes and insertions (Figs. 23—29, and Pl. 103, Figs. 84, 85), whereby mostly arise rows of figures dovetailed together and uniformly covering the surface. The S-shaped forms also, which here and there occur isolatedly (Figs. 40—43), may be traced back to the wave ornament, of which however they appear only as detached elements. A combination such as Fig. 44 gives rise to manifold suggestions; compare Figs. 43, 44 of Pl. 102.

By a diversified treatment of originally uniform parts a whole series of motives is developed. From a network of diagonally disposed squares, such as may easily be produced in weaving (Figs. 45, 47), animal ornaments are obtained, whose origin is elucidated by Fig. 81, Pl. 103. To this class also belong the indented square and the cruciform patterns (Figs. 48—53 and 55), as well as the detached designs for bands (Figs. 56, 57). Fig. 54 is peculiar, while 58 and 59 may seemingly be described as wickerwork patterns, to which technique might also perhaps be reduced a portion of the simple diagonal square designs. Nor is it surprising that rhombs are occasionally met instead of the squares (Fig. 60).

From the fusion of several of the hitherto described elements, or from a somewhat modified form of the same, there further arise numerous motives, examples of which are seen in Figs. 61—67. Many others will be met in examining the coloured illustrations.

Isolated ornamental forms, which do not appear directly dependent on others, are grouped together in Figs. 68—78. Fig. 72 springs perhaps from 78, that simplest style of ornament on earthenware, in which the circle is made by the pressure of the stem of a reed. Figs. 73 and 76 apparently belong rather to the category of ornaments derived from human figures, while 75 should perhaps be grouped with the dog forms figured on Pl. 103, Figs. 31 and 32.

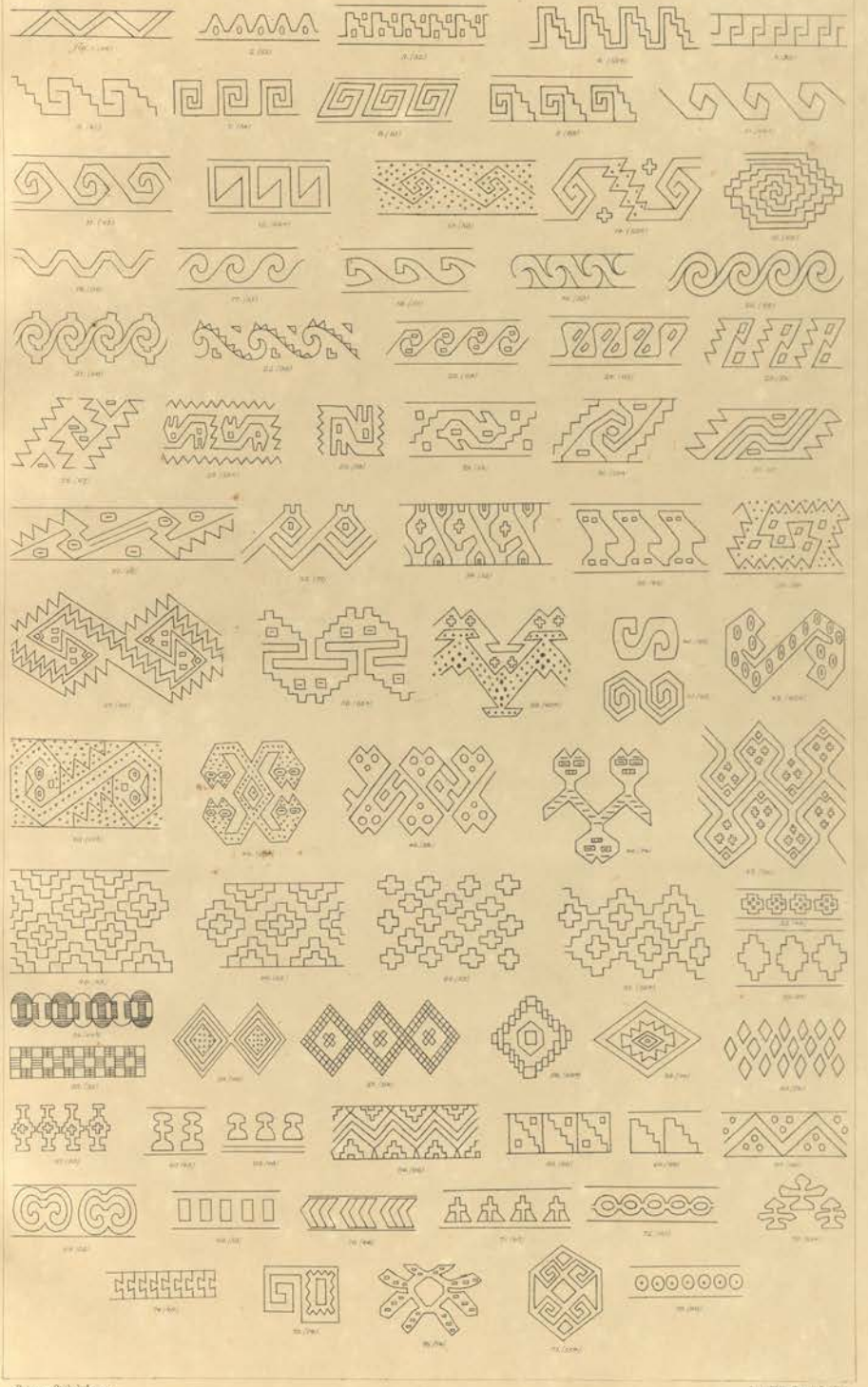

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PLATE 105.

MAIZE COBS.

(Natural size.)

On this and the two following plates are shown some of the most interesting vegetable objects deposited with the dead. Specially abundant are alimentary substances, notably maize cobs and maize grains. So well preserved is the Maize that under the microscope the husk, gluten cells and the cells with the starch grains may be detected (Pl. 106, Figs. 10). But the embryo (Pl. 106, Figs. 19 and 20) has been browned, hence all hope of germination gone. Amongst the numerous cobs three types may be distinguished.

I. Common Maize with rather narrow, flattened and long grains rounded above.

II. Sharp-grained Maize, partly with patulous grains, Zea Mays rostrata Bonafous, but never so patulous as the modern Z. M. rostrata; partly with imbricated grains. The latter has by the present writer been named Zea Mays peruviana in the Zeitschrift für Ethnologie XII (1880) p. 95.

III. Umbilicate Maize, in which the grains have a navel-like impress above, not however quite corresponding to the wide-spreading horizontal umbilicus of the "Dent-corn".

Here also occur transitions from I to III and especially from II to III.

I. Group: Common Maize, Zea Mays vulgata Körnicke.

Fig. 1. Cob with 12 rows, 11.2 cm long, 3.4 cm thick. Grains red-brown, somewhat irregular, up to about 13 mm long and 9 mm broad above, 5 mm thick.

2. Similar 12rowed cob, 11 cm long, 3.2 cm thick. Grains 7 mm broad, 5 mm thick.

3. Similar cob, but thicker, 16 rows, 9 cm long, 3.8 cm thick; grains 7 mm broad above, 4½ mm thick.

4. Maize cob still enveloped in its sheath, perhaps to be included in Group II.

II. Group: Sharp-grained Peruvian Maize, Zea Mays peruviana Wittmack.

This group, now probably extinct, is the most interesting of all. Perhaps it represents one of the two varieties, of which Tschudi merely says that they are no longer cultivated without further describing them. (Tschudi, Peru, Reiseskizzen, I. p. 261, II. p. 397).

Fig. 5. Shortest of all cobs discovered, 5 cm long, 4.3 cm thick, 16 rows, grains very pointed.

6. Similar cob, 18 rows, 6.2 cm long, 3.9 cm thick, a few grains worm-eaten.

7. Short 12rowed cob, 5.2 cm long, 3.1 cm thick, rows spiral, grains thick.

8. Longer, black-brown, 10rowed cob, 8 cm long, 3 cm thick, cylindrical, almost of fir-cone shape, grains very pointed, unusually close. Strongly resembles many cobs copied in stone. (Painted by Mr. E. Krause, Architect).

9. Cob of larger size, 12 cm long, 4.1 cm thick, 14 rows above, 15 below, 9 mm broad, 5—6 thick.

Note. Of this group the largest cob is figured on Pl. 106, Fig. 5.

III. Group: Umbilicate Maize, Zea Mays umbilicata Wittmack.

a. Transitional forms from the pointed to the umbilicate.

10. Black-brown 12rowed cob, 11.2 cm long, 4.1 cm thick, grains pointed with slight umbilicus.

11. The same, but thicker, red-brown; 14 rows, 10.7 cm long, 4.5 cm thick.

12. The same, still thicker, 16 rows, 9.5 cm long, 5 cm thick; umbilicus more distinct.

Reiss u. Stübel Ancon.

(Fig. 1-12 = 3/4)

Lith. Wilh. Greve, Berlin.

PLATE 106.

MAIZE COBS AND OTHER PLANTS.

(Figs. 1—4, 13—20 natural size.)

a. Transition forms from the sharp-grained to the umbilicate cobs (continued).

Fig. 1. Very thick, blue-black sharp-grained cob showing transition to the umbilicate.

b. Transition from the common to the sharp-grained and umbilicate forms.

2. A very interesting cob! To the left common Maize; to the right flat, pointed, very broad and partly somewhat umbilicated grains. Rows 16; length 10.8 cm; thickness 4.7 cm; grains 12 mm long, 7½ broad, 5 thick.

3. Umbilicate Maize, obviously developed from the common variety and representing a further stage of the foregoing. Cob very thick with 18 rows, 10.5 cm long, 4.7 cm thick.

c. True umbilicate Maize.

4. Blue, umbilicate Maize, very thick, with 22 rows; cob 8.5 cm long, 5.3 cm thick; grains 13.5 mm broad, 7 mm thick.

d. Sharp-grained Maize with imbricate grains (Zea Mays peruviana Wittmack).

5. Largest cob found; of the sharp-grained variety, Pl. 105. 12 cm long, 4.7 cm thick, 14 spiral rows above, 15 below.

6. Small grain of common Maize seen from above; *e* embryo.

7. The same twice magnified, in longitudinal section; *e* the browned embryo.

8. Grain of the sharp-grained Maize; side view; *e* embryo.

9. The same in longitudinal section; twice enlarged; *e* embryo; *m* flour portion (endosperm).

10. Cross-section of a grain of the sharp-grained Maize, magnified a hundredfold; *s* husk; *k* gluten-cells, mostly browned, with fatty particles; *st'* outer, *st''* inner portion.

11. Starch-grains from the outer, horny part of the grain, lying close together; magnified four-hundredfold; mean diameter of the largest 0.04 mm; *a* a double grain.

12. Starch-grains from the inner mealy part, magnified 400 fold, rounder and looser than the previous. Diameter of the smallest 0.005 mm, of the largest 0.025; *a* sundry damaged grains with holes and slits.

13. Portion of the male bloom of the Maize plant, abnormal and androgynous, that is, with several grains at the base; found in the mummy wrappings. It is highly interesting to have herewith a proof that such abnormities, common enough at present, also occurred hundreds of years ago.

14. Spray of a sea-shore grass, a Vilfa, probably the Vilfa fastigiata Nees, or V. tenacissima H B K; used in the mummy wrappings.

15. Piece of a Bromeliacea, according to E. Morren probably Tillandsia andicola Gillies. Wrapping material.

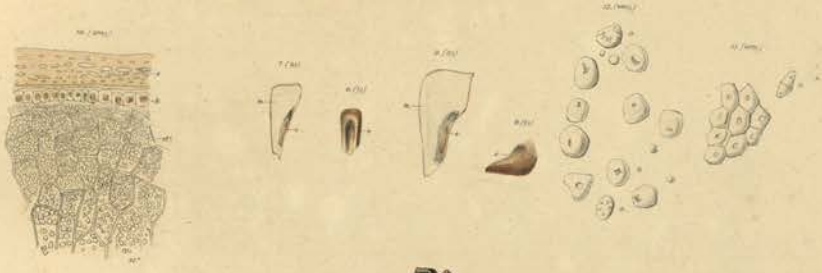
16. Blossom of a Bromeliacea, according to E. Morren probably Tillandsia maculata R and P.

17. Psidium pyriferum L. (P. Guiava Radd.), the Guayava, delicious tropical fruit. The stone cells in the thick pulp helped to identify it.

18. Fruit of Lafoënsia acuminata D. C. (Lythraceae). Leaves used in dyeing. The seeds are alate and disposed vertically on the ground of the fruit.

19. Separate seed of Fig. 18; *a* convex, *b* concave side. These seeds are thin as a piece of paper, but somewhat thicker in the centre, where the core is situated.

20. Chenopodium Quinoa L. The seeds of an orach, still a staple of food amongst the Peruvians. *a* natural size; *b* magnified; *c* magnified, in longitudinal section.



Reina u. Stuhel. Ancon.

Lith. Mill. Gross. Berlin.

PLATE 107.

SUNDRY FRUITS, SEEDS, ROOTS &c.

(Most in natural size.)

Figs. 1 and 2. Pods of a Mimosaceae.

3. Seeds from No. 2.

4 and 5. Arachis hypogaea L. Ground-nuts, "Mani". Seem to have been largely cultivated, and perhaps served, as they still do, in the preparation of a fermented drink, the chicha de mani (see Wedell, Voyage dans le Nord de la Bolivie, 442).

6 and 7. Phaseolus Pallar Molina, a bean indigenous in Peru and Chile; views shown of side and hilum.

8 and 9. The same, split; inner and outward view.

10 and 11. Longish kidney-beans, "date beans", Phaseolus vulgaris oblongus Savi.

12 and 13. Elliptical kidney-beans, "egg-beans", Ph. v. ellipticus Mus. and transitions to globular forms. Hitherto Asia has been regarded as the original home of the common kidney-beans. But from these sepulchral finds it seems proved that, like the scarlet-runners, they come from America. (Wittmack in Verhandlungen des botanischen Vereins der Provinz Brandenburg, Sitzungsberichte XXI. p. 176. Nachrichten aus dem Club der Landwirthe zu Berlin No. 115. (20. Juli 1881) p. 782. — A. de Candolle, Origine des plantes cultivées, 270.)

14. Jatropha Manihot. Manioc (Cassava) root, a staple food.

15. Cucurbita maxima Duch. Seed of the giant gourd (confirmed by Mr. Naudin).

16. Cucurbita moschata Duch. Seed of the musk-gourd (confirmed by Mr. Naudin).

17. Lagenaria vulgaris Ser. Seed of the "Herkules' Club". Pilgrims' gourd.

18. Convolvulus Batatas L. Tuber of the batata.

19. Starch grains of the foregoing, 400-fold enlarged; mostly composed, greatest diameter 0,08 mm.

20. Sapindus Saponaria L. Fruit of the soap-tree; pulp used as soap.

21—30. Fruits and seeds of the "Lucuma", probably Lucuma splendens D. C., or L. valparadisaea Molin, which is perhaps identical with it. — A staple fruit of the Peruvians; often found split in two.

21. Whole fruit, trilocular.

22. The same, bilocular.

23. The same, unilocular.

24. A similar fruit, half open, showing the seed.

25. Fruit split in half, with two cells, and faint indication of three others undeveloped.

26. Fruit split in half, resembling the foregoing, but the three sterile cells more distinct.

27 and 28. Seeds with shining chestnut-brown shell and dull pale longish hilum.

29. Embryo freed from its shell, with its two unequal cotyledons.

30. A single cotyledon.

31. Inga Feuillei D. C. (?) vulg. Pacai; its sweetish pulp is edible. (Pod alate on both margins).

Fauna v. Südwest Australien.

Lith. Anst. Gebrüder Berlin.

PLATES 108—110.

SLIGHTLY DEFORMED SKULL.

(Natural size.)

The skull (No. 1554) has been selected from the large number collected by Messrs Reiss and Stübel at Ancon, because it bears but slight traces of artificial deformation, and shows only such morbid changes as could have produced no determining influence on its form. Hence it may be taken as a fairly typical specimen. From its appearance it seems to have lain for a considerable period on the surface, for it has a bleached, almost white look, while the cortical stratum on the frontal region has cracked and in many places scaled off. At the base and on the right side alone it is of a more yellowish colour. Otherwise it is well preserved, even thick and heavy; only the right mastoid process is cut off.

Of pathologic modifications the following should be mentioned: 1. Round the great occipital foramen traces are seen of *Arthritis deformans*, as will be described further on. 2. Perhaps connected therewith is a general *hyperostosis* of the calvarium. Between the temporal lines the surface is rugged, and in the neighbourhood of the anterior fontanel, about the middle of the coronaria and on both sides of the sagittalis it is even ridged, while the coronaria and sagittalis themselves are depressed, the latter showing incipient obliteration. Of the emissaries the merest remnants are present. 3. The tip of the squama occipitalis has become separated as an *os triquetrum*, and at the angle has coalesced with the parietal bones. In the lambdoid suture are large Wormian bones, one to the right, two to the left. 4. At the posterior portion of both parietals is visible a longish depression, apparently the result of a traumatic influence. 5. On the right supraorbital arch a deep depression like a cicatrix.

The general aspect of the skull is that of an elderly man. Apart from the thickness of all the bones, the attachments of the muscles and tendons are unusually developed. Only the right supraorbital arch (with the corresponding frontal sinus) has, as stated, almost entirely disappeared; but on the other hand the left arch is highly developed. The plana temporalia overlap the tubera parietalia considerably, and approach each other behind the coronal suture to within 27 mm. measured on the surface. The occipital protuberance stands out in the form of a strongly marked spine. The linea suprema occipitalis is very distinct, as are also all other occipital muscular lines and tracings. Teeth much worn.

The cranial capacity is considerable, amounting to 1485 ccm. Form of the skull orthobrachycephalic; index of breadth 82.3; of height 74.3. The development appears on the whole regular, especially as all the sutures are open, except the sagittalis, which had just begun to close. On the other hand a climage is unmistakable in the development of the parts, due to the intrusion of the os triquetrum (35 mm. long in the sagittal direction), whereby the squama occipitalis has been lengthened, the parietalia shortened. The percental proportion of the several cranial bones in the formation of the sagittal circumference (369 mm.) is as follows: Frontal bone 33.3; Parietals 30.9; Squama occipitalis 35.8.

In the Norma verticalis (Plate 109) the cranial vault appears somewhat oblique, the frontal region being a little depressed on the right side, the occiput on the left. The general form is rather broad, the greatest breadth, however, being developed at the posterior portion of the parietal bones. But despite this

breadth phaenozygia is caused by the great projection of the zygomatic arches. The front, although full and high, is but slightly prominent.

In the Norma temporalis (Plate 109) the impression of height prevails. The greatest convexity of the vertical curve lies a finger's breadth behind the coronal suture. The front is receding, owing to the continuous rise of the excessively long posterior portion of the frontal bone. The vertical curve proper is short, as it begins to fall at once from the intertuberal line of the parietals down to the occipital region. At the parietals themselves the fall is rather abrupt; then follows a slight depression at the lambdoid suture, and lastly a decided bulging out of the upper squama. Tips of the alae temporales short, the sphenoparietal suture measuring only 8 mm. on the right, 11 on the left side.

The Norma occipitalis (Plate 108) seems slightly ogival, the middle of the superior circumference contour appearing somewhat high and raised, the sides faintly arched or almost straight, the base flatly rounded. The squama occipitalis is high, taking the os triquetrum into account; the lambda angle acute. In the direction of the transverse suture runs a slightly arched furrow, which is partly concealed by the linea semicircularis suprema. The linea superior is well marked, with a decided depression below it. The linea inferior also is very distinct.

In the Norma basilaris (Plate 110) the impression of breadth prevails, although the full occiput itself does not appear short. The foramen magnum, which is rather round and short, has diameters of 33 mm. by 31 mm. Its margins are jagged and thick, especially behind the condyles, where lies a prominence outwardly limited by a smooth furrow, which apparently corresponds to the arch of the atlas. Both condyloid processes, although projecting considerably, are flattened and uneven, as if compressed, and surrounded by osteophytes (Arthritis deformans). The anterior margin is thin. The Apophysis basilaris with high tuberculum pharyngeum and two lateral prominences. Styloid processes at the base well marked; ends broken off; mastoid processes large, but encroached upon by the very deep incisures. Pterygoid processes, especially the external laminae, very large.

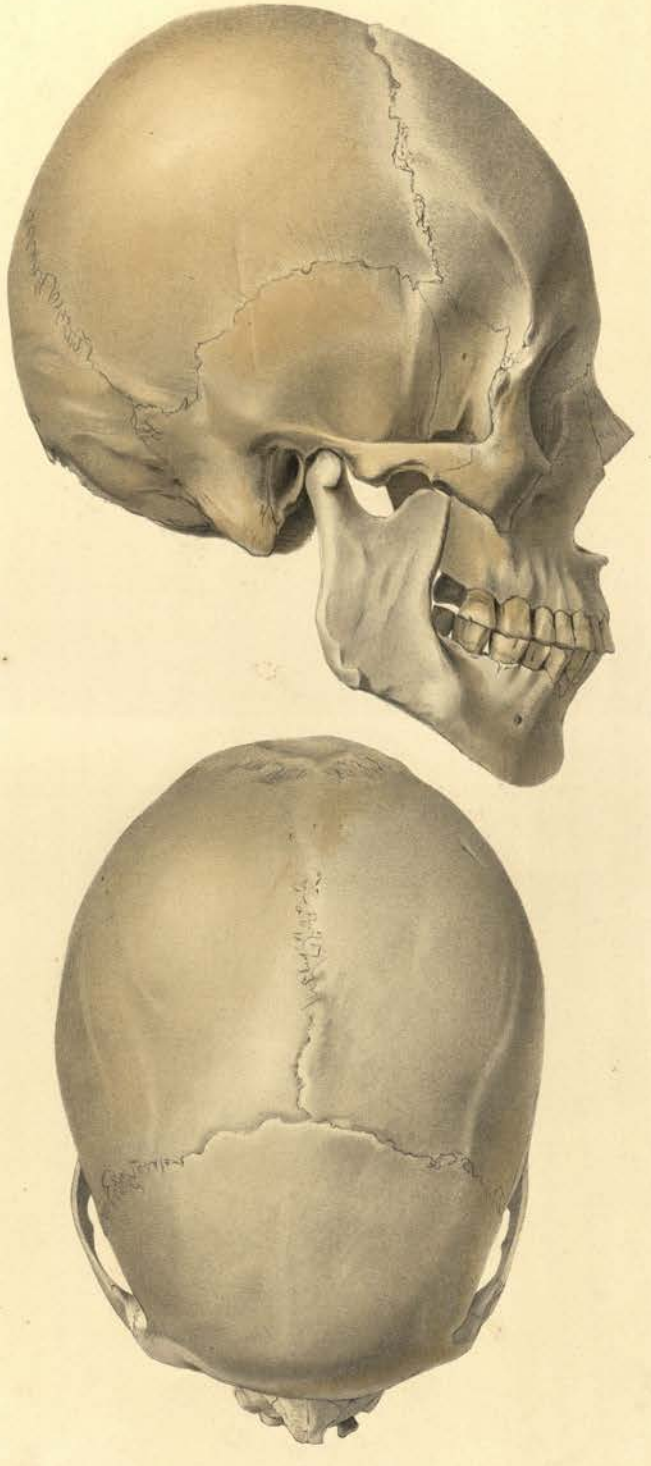
In the Norma facialis (Plate 108) the skull looks high and broad. This impression is largely due to the calvarium proper, which rises steadily towards the coronal suture. The frontal region itself is moderately broad (93.5 mm); while the coronal diameter amounts to 112 mm. Glabella little developed; tubera low. Owing to the size of the jaw-bones the facial skeleton is really high (116 mm), although, thanks to the breadth of the zygomatic arches, it has a chamæprosopic index (84.5). The orbits are large, somewhat round and high, hypsiconchous; index 91.2. Nose long and narrow; ridge concave towards the root, below very projecting; nasal aperture high, oblique, rather narrower on the left side; index 41.5; hyperleptorrhine. Cheek-bones large and prominent; very marked tubercula temporalia. Very deep fossæ caninæ with large foramina infraorbitalia. Large alveolar process of the upper jaw; prognathous. Teeth large, even the canine teeth projecting forward; all deeply worn down to the dentine. Facial angle 67°. Palate very deep, obliquely inclined forward; interior surface very rough; leptostaphyline (index 71.5). Lower jaw very strong, especially in the middle portion, which is 36 mm high; branches wide, 35 mm; condyloid process 66 mm long; angle 122°, its lower edges slightly arched outwards. Chin massive and broadly rounded. Lower curve of under jaw widely expanded.

A sagittal section (Plate 110) shows unusual thickness (sclerosis) of the calvarium, and especially of the frontal bone; sinus sphenoidealis uncommonly large; clivus Blumenbachii steep; dorsum ephippii curved round; sellar angle 145°. All sutures, except the squamous and the middle of the right half of the coronaria, are obliterated at the inner surface of the skull. Sinus transversus and sinus jugularis to the right very wide, those to the left far narrower. Anterior cranial fossa rather narrow; orbital roof strongly arched inwardly; middle cranial fossa deeply excavated; squama temporalis very thin; middle part of the skull mostly expanded upwards and backwards; posterior cranial fossa spacious. Conspicuous features of this skull are the large vault of the palate, and the well-marked prognathism of the jaws.

Rudolf Virchow.

108, 109, 110.

Fig 1



Rosen u. Michel, Berlin.

Lith. Inst. Gross, Berlin.

PLATES 111—113.

GREATLY DEFORMED SKULL.

(Natural size)

A characteristic specimen of the kind of artificial deformation practised in Ancon is presented by the skull (No. 1568) taken from a mummy pack, which was found together with another in a grave over three ells deep. Not having been exposed to the air, it shows a deep yellow colour, passing in the face to an almost shining yellow-brown.

The distortion affects nearly all the parts. The frontal is directed obliquely back, forming an almost level surface as far as the coronal suture. Tubera and glabella are absent, but on the other hand, a low Crista frontalis is present. Nasal process broad and flat; supraorbital bosses not very prominent, but on either side a strongly marked Crista temporalis. Parietals quite oblique, the right being pressed so far forward that its greatest bulge lies in the temporal region, while the left stands out behind and to the left in the shape of a conic eminence. In the occiput as such the asymmetry is less striking, although on the whole it bulges out towards the left and behind, while from nearly under the lambda angle its vault becomes changed to a surface sloping obliquely forwards and downwards.

Owing to the effects of pressure numerous sutural synostoses have arisen. In the Coronaria, apart from ossification of the lower lateral parts on either side, the medial portion of the left half has been obliterated, a remnant 23 mm long being alone preserved in the region of the stephanion. The spheno-parietal and spheno-frontal sutures have disappeared on both sides, resulting in a bomb-shaped projection (compensation) of the parietal angle of the frontal bone, and a deep depression of the lower section of the ala temporalis. Of the Sagittalis the foremost section alone has survived to a length of 11 mm; while in the other sections nothing is visible except traces of the suture, which in the middle declines to the right, behind to the left. Emissaries absent. Lambda suture fairly well preserved, and very jagged; its angle 140°, but deflected towards the left. At the same time the left branch is curved forward and elongated. It measures in a straight line 121 mm, or 11 mm more than the right branch. Nothing remains of the transverse suture, while the mastoideo-occipitalis has become ossified, leaving traces only behind it. Squamous suture alone completely intact. The whole surface of the Calvaria appears thick and compact, somewhat uneven and sclerotic.

The deeply worn teeth bespeak an elderly person, whose male sex is indicated by the strong sinew and muscular attachments. Nevertheless the cranial capacity is very small, not more than 1150 ccm, consequently 335 ccm less than that of the comparatively normal skull No. 1554. The form of the cranium is naturally extremely *plagiocephalic*, the indices showing *hyperbrachycephaly*: Breadth 98.7 (15.3 more than No. 1554); Height 78.3 (4 more). The semi-circular temporal lines, which are very strong, exceed the tubera, especially on the left side, where a broad ridge runs to the lambda suture. Planum temporale very large and highly arched on the right, quite steep and almost flat on the left side. Protuberantia occipitalis externa, and the linea superior are replaced by a thick broad transverse ridge.

The proportion of the several cranial bones to each other has been still more modified to the disadvantage of the central region, and to the advantage of the occiput. The percental proportion for the frontal bone is 35.0, for the parietals 28.7, for the occiput 36.3. Thus not only is the squama superior (or superior portion of the squamosae) large and wide, but the facies muscularis occipitis is also large, much depressed and furnished with deep muscular tracings (Plate 111).

In the Norma basilaris (Plate 113) particularly conspicuous is the obliqueness, especially of the left

side of the occiput, which projects far backwards. Although tolerably regular, the foramen magnum is somewhat more bulging towards the left and behind; diameters 31 to 24 mm. The right condyloid protuberance more prominent. A boss about the size of a grain of hemp projecting from the anterior edge towards the foramen. Apophysis basilaris broad with a deep nuchal fossa. Mastoid and styloid processes large, as are also the pterygoid processes, especially where the hamulus is highly developed.

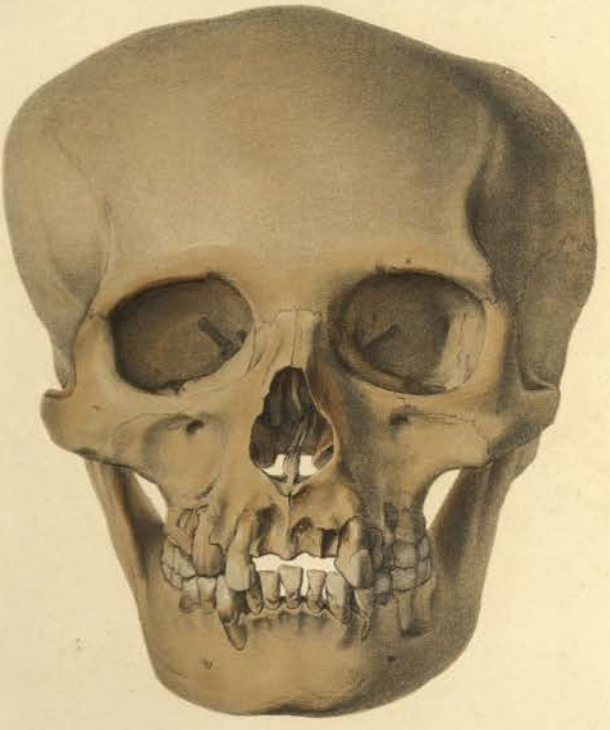
The front view (Plate 111) shows under a moderately broad brow (90 mm) a chamaeprosopic face (index 84.3). Orbits very large, of a roundish angular form, but unequal, the left being larger and more oblique; index of both hypsiconchous, but varying from 89.1 for the right to 85.3 for the left socket. Cheek-bones powerful, with strong tuberositas temporalis; surface somewhat arched, especially on the right. Nose also oblique, inclining more to the right. Although the nasal process of the frontal bone extends far down, the naso-frontal suture is regular, and the root little sunk. The whole nose very narrow; ridge highly concave, and projecting far below (Plate 112); apertura pyriformis compressed quite obliquely; spina nasalis very prominent; index 40.3; hyperleptorrhine. Fossa canina dextra deeper than the sinistra. Alveolar process *prognathous*, 16 mm high. Facial angle 62°. Teeth very large, especially the much worn edges, which are moreover transversely grooved. Upper front teeth missing; molars and pre-molars highly carious. Palate deep and wide with irregular protuberances; index leptostaphyline, 70.5. The lower jaw has a very peculiar shape; narrow behind (distance of the maxillary angle only 77 mm); in the middle of the lateral part broadens, merging forwards in a roundish chin. The lateral parts very thick; rami broad (35 mm), with somewhat arched surface and wide incisura, less obliquely attached (110°). Obviously an outward pressure had also been applied to the lower jaw, probably through a bandage tied round the head, for the angles are much bent inwards, most so on the right side. On this side is also visible (Plate 113) a displacement of the front teeth, the pre-molars included, which is caused by pressing the eye-tooth forward, the pre-molar I backward, so that both stand one behind the other. Pre-molar II shifted somewhat forward. The right wisdom-tooth much affected by caries.

On the section (Plate 113) may clearly be perceived both planes of pressure, the frontal and occipital, which are almost parallel to each other. The cranial cavity is consequently contracted both before and behind. The far from complete compensation has taken the direction partly of the tubera parietalia, partly of the temples, partly of the cerebellar fossae. The bones of the roof are thick, and especially the parietal sclerotic through ossification of the marrow. The temporal bone and the lower portion of the squama occipitalis alone have been much attenuated and rendered transparent in the direction of the compensations. Both frontal and sphenoid sinus are spacious. Clivus Blumenbachii slightly depressed, dorsum ephippii pitted. Apophysis basilaris very spongy (more so than indicated in the drawing), and at the same time depressed. The whole base of the skull more straight; sellar angle 160°. Despite the straighting the basilar length (distance of the further edge of the foramen magnum from the nasal root) is not enlarged, but even diminished by 2 mm. The distance of the external auricular foramen from the nasal root is simultaneously diminished by 1 mm on the right, but enlarged by 3 mm on the left side, — a relation which would seem best explained by the extreme plagiocephaly. Both the sulci arteriosi and the sulci venosi on the inner surface of the skull are unusually broad and deep (more so than appears from the drawing), while on the other hand the Pacchionii are almost completely absent. *Complete inner synostosis of all sutures*, except the squamous and smaller sections of the lambdoids.

Compared with the facial portion, the cerebral portion of the skull appears greatly reduced. Orbits very large, jaws strong, nose spacious. Roof of the palate, which is very thick, and provided with strong ridges, passes with uniform curvature to the alveolar process of the upper jaw, which is also very spongy and thick.

Rudolf Virchow.

111, 112, 113.



Lith. Wilh. Greve, Berlin

Lith. Wilh. Greve, Berlin.

PLATES 114—116.

GREATLY DEFORMED SKULL.

(Natural size.)

The skull (No. 1552) is distorted by compression in the highest degree. It belonged to an elderly man, and must have lain rather near the surface in the grave, for its colour, generally yellow-brown especially at the base, becomes lighter towards the calvaria, while some almost white places are visible on the parietals.

The effect of the deformation has mainly been a depression and flattening of the roof, affecting both the frontal and parietals, the latter from the intertuberal line backward. It looks as if the parts were soft and had been sat upon. At the same time the tuberal regions are pressed outwardly, the right more towards, the left more backwards. Thus is produced a three-lobed form in the horizontal plane, the posterior sagittal region being pressed deeply in. The upper squamosal on the occiput is bent together from above downwards and pressed out backwards, while the lower is flattened quite slopewise. At the same time the central portion of the head is so much shortened and the occipital squamosal so greatly elongated, that the percental relation of the three sections of the sagittal circumference is calculated at 35.3 (frontal), 26.7 (parietal), and 38.0 (occipital). Hence compared with the skull No. 1554 the parietal measure has been diminished by 4.2, and the occipital lengthened by 3.2, while the frontal has increased only by 1.1.

The skull is moreover on the whole extremely crooked, the left side being thrust more backwards and outwards. This applies mostly to the posterior portion of the parietals and the adjoining portion of the upper squamosal. The pressure has also caused a synostosis of numerous sutures. The sagittalis is almost completely obliterated, the posterior part 20 mm long to the parietal emissaries being alone preserved. The emissaries are likewise obliquely disposed, the right more backwards, and at the same time brought much closer together. Hence nearly to the coronal suture indistinct traces alone are still seen of the sagittal, which on the whole is pushed somewhat convexly to the right, and so far from the median line that the lambdoidal angle stands much further to the left than the point of attachment of the suture on the coronaria (bregma). Near the right parietal tuber a longish depression. *Two abnormal emissaries* lie before the normal emissaries to the left near the central portion of the obliterated suture. The coronaria is very indistinct, short remnants of a suture bent backwards being alone visible on either side in the region of the stephanion. Further on all is effaced. On the right the parietal angle is absent, replaced by a flat epipteric*um* (indistinct in the illustration); ala somewhat narrower and bent in; on the left the spheno-parietal suture a simple line, the ala narrowed and set deeply down before the spheno-temporal suture. The lambdoidal suture (Pl. 114), thoroughly serrated, is completely preserved although with a very open angle of 130°, the left branch, disposed at first nearly quite horizontally, running further on downwards with a great almost angular curvature over the already mentioned prominence. Here in the region of the left posterior lateral fontanelle an irregular square *interstitial bone*, from whose upper edge branches a remnant of the *transverse suture*, at first simple (straight), then very serrated, and still perceptible nearly as far as the occipital protuberances, but completely obliterated to the right. On this side along the central part of the lambdoidal suture runs a longish furrow showing numerous

fine sutural serratures, indications of obliterated Wormian bones: lowest section of the suture intact. On both mastoids venous channels, reaching on the right to the parietal and close to the lambdoidal suture. Lower end of the mastoideo-occipital suture has coalesced on both sides.

The cranial capacity (1055 cm), as determined by measurement with shot, is for reasons stated further on considerably less than the real. Still compared with the normal relation the skull is much reduced. Its form also has suffered even more than that of No. 1568. It is in the highest degree *plagiocephalic*, and according to its chief indices *hyperbrachy-* and *orthocephalic* (Index of Breadth 103.1, of Height 72.6).

Hence the reduction affects mainly the longitudinal relations. Thus the difference in length compared with the normal skull No. 1554 is no less than 178.5 — 157 = 21.5 mm and that of the sagittal circumference even 64 mm (369 — 305). Of the latter difference, as already indicated above, the chief part falls to the parietals, a relation which must obviously to a considerable extent be attributed to extensive synostosis. And here it is noteworthy that, spite of the synostosis of the sagittal, a compensating widening of the parietals has taken place, amounting to 14 mm (162 — 148). It also finds expression in the high figure (493 mm) of the horizontal girth.

The frontal, which below has a moderate breadth of only 89 mm, rapidly attains a coronal breadth of 121 mm, or 9 more than in the skull No. 1554. Of the tubera scarcely a trace survives. Just in front of the fontanelle region a flat *exostosis*. Laterally before the coronal suture and above the semicircular temporal line a great *compensating expansion*, continued to the temporal portion of the frontal. Very faint glabellar depression. Nasal process long and moderately broad (24 mm); naso-frontal boss moderately developed.

At the occiput (Plate 114), the upper squamosal very irregular, its left side standing out in globular form, and the centre showing a vertical depression with the appearance of a faint sutural line, which, however, on the left ends at the side of the protuberance. The latter forms a projecting hook below, above which is a small depression produced by the prominent edges of the linea superior. Linea semicircularis suprema indistinct, but superior and inferior strongly marked. Facies muscularis flattened to a slope, but with strong tracings of muscles.

The foramen magnum (Pl. 116) much distorted. Left condyle elongated, displaced further back and inwards, and impressed at the posterior end; the right pushed somewhat out and forwards. Edge of the foramen on both sides nodular and prominent; the foramen itself askew with diameters 31 and 27. Basilar apophysis broad and somewhat flat; meatus auditorii flat, somewhat narrow; pterygoid processes large, especially the external lamina and hamulus.

Face (Plates 114 and 115) although chamaeprosopic (index 85.7) seems the less broad that the zygomatic arches lie closer (4 mm more than in No. 1554), while the cheek-bones stand well out. Orbits large and high, but *unequal*, the left being the larger; index hypsiconchous (right 92.3, left 93.3). Lower edge much expanded, upper very prominent, especially outwards, where it also forms an angular projection. Very large lachrymal channels; cheek-bones somewhat depressed at the frontal processes. Fossa canina deep on the right, full and almost convex on the left. Infraorbital foramina large, right with one, left with two accessory holes above in the direction of a small suture, which reaches the opening of the infraorbital channel. Nose somewhat crooked to the right, narrow, leptorrhine (44.3). The nasal bones are inserted in the nasal process of the frontal elongated downwards, and are everywhere broad. Nasal ridge rounded off flat, curved in, highly projecting below; aperture almost triangular without praenasal fossae; Spine large.

Jaws *highly prognathous*; facial angle 62°. Alveolar process of upper maxilla large, 22 mm high; the whole portio incisiva and canina pushed forward; alveolar edges thick and rough. The dentine everywhere exposed on the well-worn teeth. On the right are absent praemolar II (alveole obliterated), and molars II and III; on the left praemolar I, while here molar III is directed with its edge quite obliquely outwards and

backwards. Palatal index 71.2, *leptostaphyline*; roof of palate narrow, inclined slopewise forward. Remarkably large foramen incisivum. At the median line exostosis. Posterior nasal spine short and broad. — Lower jaw also prognathous, high in the centre (34 mm); chin well developed, lower border thick, without plain, two very projecting apophyses geni. Back teeth absent, alveoles obliterated; front teeth worn deep into the dentine. Processes narrow (29 mm broad), but high (54 mm), and attached at an angle of 124°. At the angle a prominent muscular prominence. *At the maxillary joints symptoms of malum senile*, both fossæ and condyles, especially the right, being much worn and rough.

In sawing through, an operation requiring great effort, bits of the nasal and other bones broke off. It was then seen that much brown mould had settled firmly in the medial cranial fosse, whence it follows that the capacity previously determined at 1055 is too low. But subsequent rectification no longer possible. Still the skull (Plate 116) produces the impression of great reduction in size. The cranial bones are very thick, and in many places sclerotic. Sphenoid cavities large and sinuate; frontal irregular. Inner obliteration of all sutures excepting the squamous and spheno-parietal. Unusually deep sulci meningei, which are partly transformed to veritable channels. Sulci venosi also very deep and wide, especially on the right side. Basilar apophysis short, very spongy, rather steep, sellar angle 152°. Great shortening of the basilar line (from foramen magnum to nasal root) reduced by 8 mm (97 — 89). The obliquity of the skull is demonstrated by the fact that the right auricular opening is distant 1 mm further from the nasal root than the left, and 3 mm further from the edge of the alveolar process. The reduction of space is greatest forwards, compensation greatest in the region of the tubera parietalia and of the upper squamosal; lower squamosal almost entirely flattened. Skeleton of the face rather small, but nasal and oral cavities very spacious. In the latter the very spongy roof of the palate shows the same curvated transition to the sloping alveolar process as in the previous case.

Rudolf Virchow.

MEASUREMENTS OF SKULLS Nos. 1554, 1568 and 1552.

Cranial Numbers	1554	1568	1552
I. Measurements.			
Capacity	1485	1150	(1035) too low
Greatest length	178,5	158	157
„ breadth	148,0	156	162
Perpendicular Height	133	124	114
Auricular Height	114	107	100
Diagonal diameter	236	221	213
Horizontal compass	516	487	493
Vertical compass	322	328	319
Sagittal compass of forehead	125	112	107
„ „ of middle-head (parietals)	114	92	80
„ „ of occiput	Os quadratum 35 / 95	116	118
„ „ Total	369	320	305
Meatus auditorius to Nasal root	103	r. 98 l. 106	r. 97 l. 96
Foramen magnum „ „ „	97	95	89
Meatus auditorius „ Nasal spine	107	106 111	105 106
Foramen magnum „ „ „	93	95	91
Meatus auditorius „ Alveolar process	114	— —	114 111
Foramen magnum „ „ „	96	—	97
Meatus auditorius „ Edge of fore-teeth	—	— —	116 117
Foramen magnum „ „ „	—	—	100
Meatus auditorius „ Chin	125	124 127	125 126
Foramen magnum „ „ „	107	109	106
Frontal breadth	93,5	90	89
Coronal breadth	112	—	121
Temporal breadth	126	126	122
Tubero-parietal breadth	140 rather sloping	154 sloping	153 sloping
Occipital breadth	114	116	113
Mastoideal breath (Base)	128	121	117
Mastoideal breath (Tip)	—	100	94
Auricular breadth	119	106	111
Facial height A (Nasal root to chin)	116	112	113
„ „ „ B (Nasal root to alveolar border)	72,5	70 (?)	77
Jugal breadth	137	133	133
Malar breadth	95,5	96	101
Maxillobular breadth	100	77	86
Orbits, height	r. 36,5 l. 36,5	r. 34 l. 35	r. 36 l. 37
„ breadth	40 40	39 41	39 39,5
Nose, height	56	52	52
„ breadth	23	21	23
Palate, lenght	60	55	53
„ breadth	43	39	38
II. Calculated Indices.			
Index of breadth	82,9	98,7	103,1
Index of height	74,5	78,5	72,6
Index of Auricular height	63,8	67,7	63,6
Facial index	84,6	84,7	85,7
Orbital index (right)	94,7	89,7	92,3
Orbital index (left)		85,5	93,6
Nasal index	41,0	40,4	44,0
Palatal index	71,6	70,9	71,6

114. 115. 116.

fig. 1

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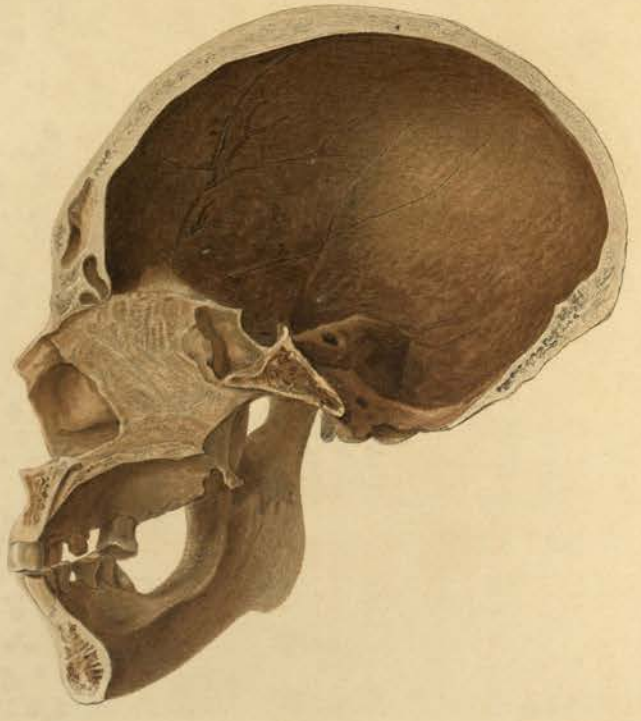

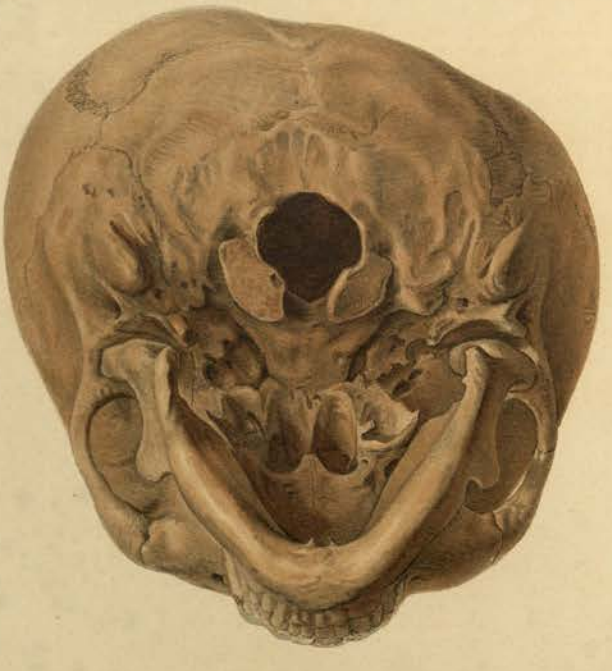

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PLATE 117.

REMAINS OF DOGS AND FOXES.

(1/4, 2/3 and 1/1 natural size.)

Amongst the zoological objects yielded by the Necropolis the remains of Canidæ occupy a conspicuous place. These came to light chiefly in the graves figured on Pl. 1. under Nos. 2 and 4; in No. 2 they were found associated with the remains of lamas.

Apart from the skull of a fox indicated on the present Plate by Figs. 4 and 4a, which is of doubtful origin, the Canine remains belong to the so-called Inca dog (Canis Ingæ Tschudi). But from the shape of the skulls, and partly also from the leg-bones, three varieties may be distinguished, viz:

1. A kind of collie breed (Canis Ingæ pecuarius Nehring).
2. A kind of turnspit (Canis Ingæ vertagus Nehring).
3. A kind of pug or bulldog (Canis Ingæ molossoides Nehring).

Most of the specimens belong to the first variety, which represents the type proper, of which the other two must be regarded as modifications.

Fig. 1. Mummy of a collie-like Inca dog (Canis Ingæ pecuarius Nehring); 1/4 of the natural size.

2. Head of another specimen of the same breed. The parts still clothed with hair show the natural colour of the coat; 2/3 natural size.

3. Head of a third specimen. The colour of the hair has probably turned somewhat pale, having apparently been originally not quite so light yellow; 2/3 natural size.

3a. The same head seen from below; 2/3 natural size. The anterior premolars (p 4 Hensel) entirely absent in both upper-jaws.

3b. Right side of the dental series of same skull; natural size; teeth indicated according to Hensel's method.

3c. Profile of the same head; natural size.

3d. Lower-jaw of the same seen from above; 1/2 natural size. The anterior premolars entirely absent in both halves of the lower-jaw.

3e. Right half of the same lower-jaw; in profile; natural size.

4. Facial portion of skull of a fox-like animal, which may be closely allied to the Canis gracilis Burmeister; natural size. From its state of preservation seems much more recent than the foregoing; presumably not contemporaneous with the Inca-dogs, but during the excavations may have turned up in the vicinity of some grave, and so got included with the other zoological objects.

4a. Same skull in profile; natural size.

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PLATE 118.

REMAINS OF CANIS INGAE.

(1/2, 1/3 natural size.)

Fig. 1. Skull of a turnspit-like Inca dog (Canis Ingæ vertagus Nrg.); profile in natural size.

1a. Palatal aspect of same; natural size. The anterior premolars entirely absent in both upper-jaws.

2. Skull of a collie-like Inca dog (Canis Ingæ pecnarius Nrg.); profile in 1/2 natural size.

2a. Palatal aspect of same; 1/2 natural size. Last molar of right upper-jaw entirely abscal.

2b. Accompanying lower-jaw; profile of the right half; 1/2 natural size.

2c. The same seen from above; 1/2 natural size. Anterior premolar and last molar completely absent.

3. Skull of a bulldog or pug-like Inca dog (Canis Ingæ molossoides Nrg.). Profile; natural size.

3a. Palatal aspect of the same; natural size. Anterior premolar of right upper-jaw completely absent.

3b. The same from behind; natural size.

3c. The same from above; 1/2 natural size.

3d. Right half of accompanying lower-jaw. Profile; natural size; last molar completely absent.

4. Humerus of a turnspit-like Inca dog (Canis Ingæ vertagus Nrg.). Side view; natural size. Characteristic is the marked curvature of the blade.

4a. The same from behind; natural size. Noteworthy is the absence of the perforation otherwise usual in the olecranon fossa of dogs.

5. Ulna of the same animal; side view; natural size.

5a. The same from above; natural size. Characteristic is the relatively strong curvature of the bone, which both here and in the humerus fully recalls extreme specimens of the European turnspit.

PLATE 118.

REMAINS OF CANIS INGAE.

(1/3, 1/1 natural size.)

Fig. 1. Skull of a turnspit-like Inca dog (Canis Ingae vertagus Nrg.); profile in natural size.

1a. Palatal aspect of same; natural size. The anterior premolars entirely absent in both upper-jaws.

2. Skull of a collie-like Inca dog (Canis Ingae pecuarius Nrg.); profile in 1/3 natural size.

2a. Palatal aspect of same; 1/3 natural size. Last molar of right upper-jaw entirely absent.

2b. Accompanying lower-jaw; profile of the right half; 1/3 natural size.

2c. The same seen from above; 1/3 natural size. Anterior premolar and last molar completely absent.

3. Skull of a bulldog or pug-like Inca dog (Canis Ingae molossoides Nrg.). Profile; natural size.

3a. Palatal aspect of the same; natural size. Anterior premolar of right upper-jaw completely absent.

3b. The same from behind; natural size.

3c. The same from above; 2/3 natural size.

3d. Right half of accompanying lower-jaw. Profile; natural size; last molar completely absent.

4. Humerus of a turnspit-like Inca dog (Canis Ingae vertagus Nrg.). Side view; natural size. Characteristic is the marked curvature of the blade.

4a. The same from behind; natural size. Noteworthy is the absence of the perforation otherwise usual in the olecranon fossa of dogs.

5. Ulna of the same animal; side view; natural size.

5a. The same from above; natural size. Characteristic is the relatively strong curvature of the bone, which both here and in the humerus fully recalls extreme specimens of the European turnspit.

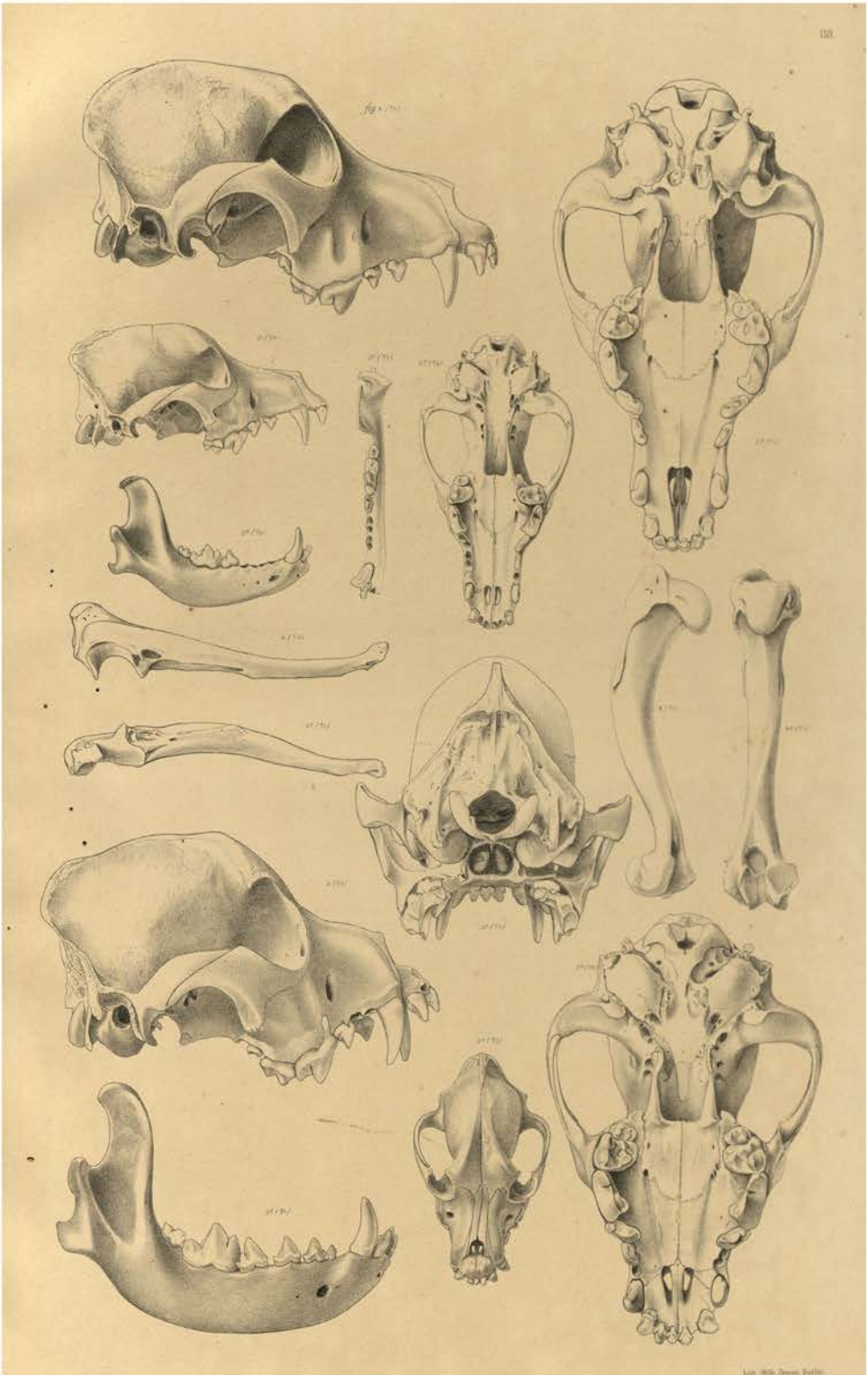

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PLATE 119.

REMAINS OF RODENTS AND RUMINANTS.

(1/2, 1/10, 1/3, 1/4 natural size.)

Fig. 1. Skull of a Peruvian rat (Hesperomys sp.); seen from above; natural size.

1a. Palatal aspect of same; natural size.

1b. Accompanying left lower-jaw; from the inner side; natural size.

1c. Same lower-jaw from the outside; natural size.

1d. Molar series of left upper-jaw; anterior end turned upwards; 2/1, natural size.

1e. Molar series of left lower-jaw; anterior end turned upwards; 2/1 natural size.

2. Skull of a species of Guinea-pig, either identical with or closely allied to the common tame Guinea-pig (Cavia cobaya); seen from above; natural size.

2a. Palatal aspect of same; the incisors have dropped out; natural size.

2b. Accompanying left lower-jaw; from the outside; natural size.

2c. Molar series of left upper-jaw; anterior end turned downwards; 2/1, natural size.

2d. Molar series of left lower-jaw; anterior end turned downwards; 2/1 natural size.

3. Mummified or dried head of a Guinea-pig, with skin and hair. The colour of the hair is generally red-brown; on nose and forehead yellowish-white; natural size.

4. Fore-foot (including fore-arm) of a Guinea-pig, whose whole body has been preserved in the mummified state; remarkable for the presence of five instead of the usual four toes; natural size.

4a. Hind foot of same specimen with four instead of the usual three toes.

5. Skull of a female lama, seen from the right side. What remains of the hair is blackish; 1/5 natural size.

5a. Palatal aspect of the same; 1/5 natural size.

5b. Molar series of right upper-jaw; anterior tooth absent, and indicated only by the alveoli; natural size.

5c. Accompanying right lower-jaw; seen from the outside; 1/1, natural size.

5d. Molar series of same lower-jaw; from above; natural size.

6. Skull of a male lama, seen from above; characterised by a broader front; 1/5 natural size.

6a. Muzzle of same skull, seen from the right side; characterised by the strong canine and incisive teeth; natural size.

7. A lama's mummified fore-foot, from the carpus back; hair of a black-brown colour. The horny sole has been detached behind; 1/3 natural size.

8. Branch of a stag's antler, belonging to a Cariacus species, very like the corresponding branch of a Cariacus savannarum in the Berlin University Zoological Museum; natural size.

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